

OPEN WIRE POLE TOP ASSEMBLY UNITS

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CHART 1, WIRE DEAD LOADS

1. GENERAL

- 1.01 This section is intended to provide REA borrowers, consulting engineers, contractors, and other interested parties with technical information for use in the design and construction of REA borrowers' telephone systems. It discusses in particular the open wire pole top assembly units that are designed to meet the various situations encountered in the construction of open wire plant.
- 1.02 This section replaces REA TE & CM-625, Issue No. 5, dated December 1960. The section is revised to bring it into conformity with the issue of REA Form 511, "Telephone System Construction Contract," dated March 1962.
- 1.03 Additions include steel brackets for supporting insulated open wires, (PA1-6 and PA2-4 units); new single and buckarm two-pin deadend crossarms (Type DEP) (PB1-6 and PB1-7 units); single and double four-pin crossarms (Type 6C) for eight insulated open wires (PB4-1 and PB4-2 units); single and double crossarms (Type 10C) drilled for supporting twelve insulated open wires (PB6-1 and PB6-2); two single crossarms (Type DETE) drilled for deadending twelve insulated open wires (PB6-7); one single crossarm (Type DETE) drilled for deadending twelve insulated open wires (PB6-8 units); pin and insulator (T-2A unit); pins and insulators (T-2S unit); 2-point

pin, insulator and bracket assembly for insulated open wires (T-21 unit); and 4-point transposition bracket for insulated open wires (T-22 unit).

- 1.04 Minor changes were made in some units and 1962 dates are shown on their drawings.
- 1.05 In the construction of a telephone system several different pole top assembly units may be required on a pole in order to make a complete structure. The units have been established so that the required assemblies may be readily specified and combined as needed. In certain unusual situations it may be necessary for the engineer to prepare guide drawings to illustrate the placement of the various assembly units on a pole but these situations should be rare.
- 1.06 Each pole top assembly unit has definite design load limitations based on the inherent strength of its individual components. The design loads indicated for the various assembly units are based on the maximum vertical load, the maximum transverse (horizontal) load or the longitudinal load in the direction of the line, whichever governs, to which they may be subjected.
- 1.07 Pins and insulators are stressed by the transverse (horizontal) and longitudinal (in-line) loads more than by the vertical loads. Deadend crossarms are stressed chiefly by the longitudinal (in-line) loads. The design load limits established for the various assembly units occur when the supported conductors are subjected to storm loads as defined in the Sixth Edition of the National Electrical Safety Code (NESC) and stated in REA TE & CM-615, "Design of Bare Open Wire Plant." The vertical load is due to the weight of the conductor plus the weight of the ice, when specified. The transverse loads at corners in the line and the loads at deadends are due to the tension of the conductors in the presence of code loadings. Data are available from the various conductor manufacturers which indicate the pull or load of the conductors at various line angles (corners) and at deadends. The data are based on the tension of the conductors that would occur for various span lengths when the conductor is subjected to code loading in the heavy, medium, or light loading districts. Attention is called to the fact that the data available from the wire manufacturers indicate the load on the basis of a pair of conductors whereas the loads indicated in this section are on a per conductor basis and the loadings in the heavy, medium, and light loading districts are calculated as required by the NESC for 0°, 15°, and 30°F, respectively for these districts.

1.08 Wire Loads: Chart 1 is included to give vertical wire load information for use in judging whether a particular pole top unit is strong enough to support the load. The chart shows the vertical loads for wires in the heavy, medium, and light storm loading districts. The data are for spans where the poles are of the same height and on level ground. It is assumed in this case that a pole supports the load of a half span in each direction from it, in tangent construction. Where one pole supports its load at a higher level than the two adjacent poles, it will be supporting the load of more than the two half spans in each direction from it; and some assumption of load increase may be advisable if the difference in pole height is great. Where the poles are in a line going up a long grade, the load per pole will be about the same on each pole and equal to the load on one span if the spans are nearly equal.

2. ASSEMBLY UNITS ON EXISTING POLES (N Units)

2.01 Crossarm type pole top assembly units shall have a prefix N applied to them if they are to be placed on existing poles carrying electric, telephone, or other service.

3. INSULATED LINE WIRE ASSEMBLY UNITS

Fig. 1, PA1-6, Single Steel Support Bracket
 Fig. 2, PA2-4, Double Steel Support Bracket
 Fig. 3, PB4-1, Single Four-pin Crossarm (Type 6C)
 Fig. 4, PB4-2, Double Four-pin Crossarm (Type 6C)
 Fig. 5, PB6-1, Single Six-pin Crossarm (Type 10C)
 Fig. 6, PB6-2, Double Six-pin Crossarm (Type 10C)
 Fig. 7, PB6-7, Deadend, Two Single Crossarms (Type DETE) (Buckarm)
 Fig. 8, PB6-8, Deadend, Single Crossarm (Type DETE)
 Fig. 9, T-21, Two-point Bracket
 Fig. 10, T-22, Four-point Transposition Bracket
 Fig. 11, Insulated Wire Supports on Double Armed Pole
 Fig. 12, Insulated Wire Supports on Double Steel Support Bracket

4. BARE WIRE CROSSARM ASSEMBLY UNITS

Fig. 13, PB1-1A, Two-pin Crossarm (Type 2A)
 Fig. 14, PB1-2, Double Two-pin Crossarm (Type 2A)
 Fig. 15, PB1-3, Two-pin Crossarm (Type 2A) (With Brace)
 Fig. 16, PB1-4, Single Two-pin Sidearm (Type 2B)
 Fig. 17, PB1-5, Double Two-pin Sidearm (Type 2B)
 Fig. 18, PB1-6, Deadend, Single Crossarm (Type DEP)

- Fig. 19, PB1-7, Deadend, Two Single Crossarms (Type DEP) (Buckarm)
- Fig. 20, PB3-1, Single Six-pin Crossarm (Type 6A)
- Fig. 21, PB3-2, Double Six-pin Crossarm (Type 6A)
- Fig. 22, PB3-3, Single Six-pin Crossarm (Type 6B)
- Fig. 23, PB3-4, Double Six-pin Crossarm (Type 6B)
- Fig. 24, PB3-7, Single Six-pin Sidearm (Type 6A)
- Fig. 25, PB3-8, Two Single Six-pin Sidearms (Type 6A)
- Fig. 26, PB5-1, Single Ten-pin Crossarm (Type 10A)
- Fig. 27, PB5-2, Double Ten-pin Crossarm (Type 10A)
- Fig. 28, PB5-3, Single Ten-pin Crossarm (Type 10B)
- Fig. 29, PB5-4, Double Ten-pin Crossarm (Type 10B)
- Fig. 30, PB5-5, Deadend, Two Single Crossarms (Type DE) (Buckarm)
- Fig. 31, PB5-6, Deadend, Single Crossarm (Type DE)
- Fig. 32, PB5-7, Deadend, Two Single Crossarms (Type DET) (Buckarm)
- Fig. 33, PB5-8, Deadend, Single Crossarm (Type DET)
- Fig. 34, PB5-9, Single Ten-pin Sidearm (Type 10A)
- Fig. 35, PB5-10, Two Single Ten-pin Sidearms (Type 10A)
- Fig. 36, PB5-11, -12, -14, Deadends Single Crossarm (Types DETA, DETB, DETD)
- Fig. 37, PB5-15, Deadend, Single Crossarm (Type DETC) H Frame
- Fig. 38, PB5-16, -17, -18, -19, Deadend, Two Single Crossarms (Types DETA, DETB, DETC, DETD) (Buckarm)

5. MISCELLANEOUS ASSEMBLY UNIT

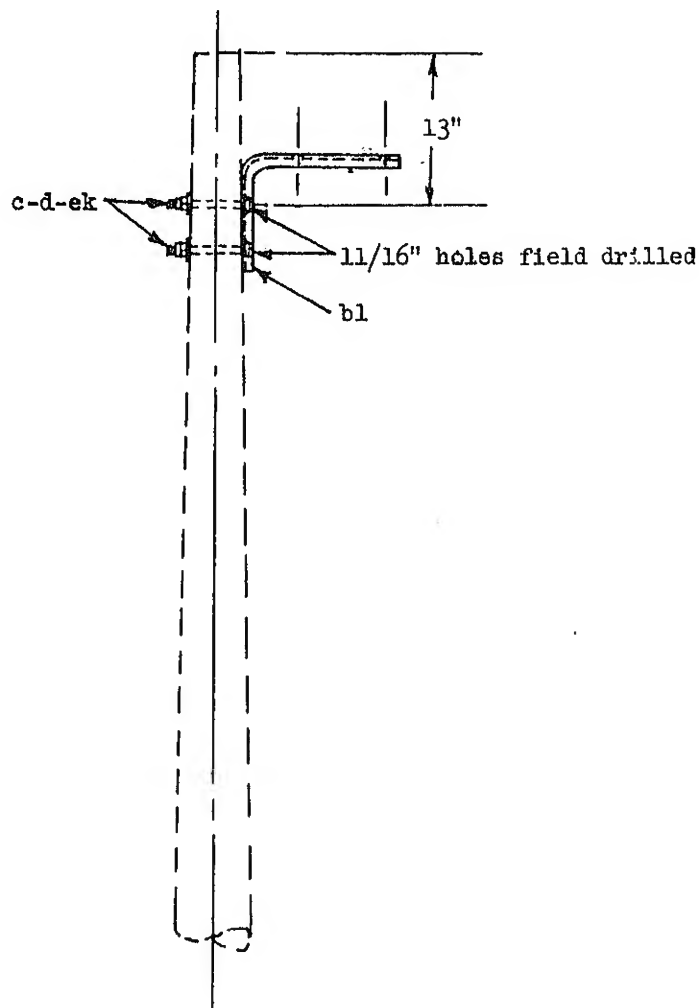
- Fig. 39, PM1, Pole Lightning Protection Assembly
- Fig. 40, PM2, Pole Ground Assembly
- Fig. 41, PM2B, Aerial Ground Wire Assembly
- Fig. 42, PM3, Pole Top Extension
- Fig. 43, PM10, Metal Pole Gain
- Fig. 44, PM14, Push Brace Accessories
- Fig. 45, PM52, -1, -2, Pole Marking
- Fig. 46, P3-1, -5, Lightning Arresters (Single and Five Pairs)
- Fig. 47, P4-1, Open Wire Power Contact Protector (Single Pair)
- Fig. 48, P4-5, Open Wire Power Contact Protector (Five Pairs)
- Fig. 49, P5-1, Drainage Unit (Capacitor-Resistor Type) Nonjoint Use
- Fig. 50, P6-1A, Drainage Unit (Inductor-Capacitor Type) Joint Use, (Connection to Ground Rod)
- Fig. 51, P6-1C, Drainage Unit (Inductor-Capacitor Type) Joint Use (Connection to MGN)

6. PINS, INSULATORS, TRANSPOSITION BRACKETS AND CLEVISES

- Fig. 52, T-1, T-2, T-2A, Pin and Insulator Units
- Fig. 53, T-2S, T-3, T-3A, Pin and Transposition Insulator Units
- Fig. 54, T-5, Two-wire Flat Deadend (Clevises)
- Fig. 55, T-5A, Double Two-wire Flat Deadend (Clevises)

- Fig. 56, T-6, Tandem Transposition (Type B, Light Duty)
- Fig. 57, T-7, Tandem Transposition (Type C, Heavy Duty)
- Fig. 58, T-18, T-19, Reinforced Heavy Duty Point Transposition
Brackets
- Fig. 59, T-20, Reinforced Heavy Duty Point Transposition Bracket

Note: Assembly Unit drawings herein are reproductions of these drawings
as shown in REA Form 511, dated March 1962.



Note 1: Use for corners from 0° to 20° .

USED ON NON-JOINT OR JOINT TANGENT OR CORNER POLES FOR
4 INCH SPACED INSULATED OPEN WIRE USING THE T-2S UNIT FOR
WIRE ATTACHMENTS. SEE FIGURES 10 AND 12 FOR WIRE ATTACH-
MENT METHODS.

RURAL TELEPHONE CONSTRUCTION PRACTICES

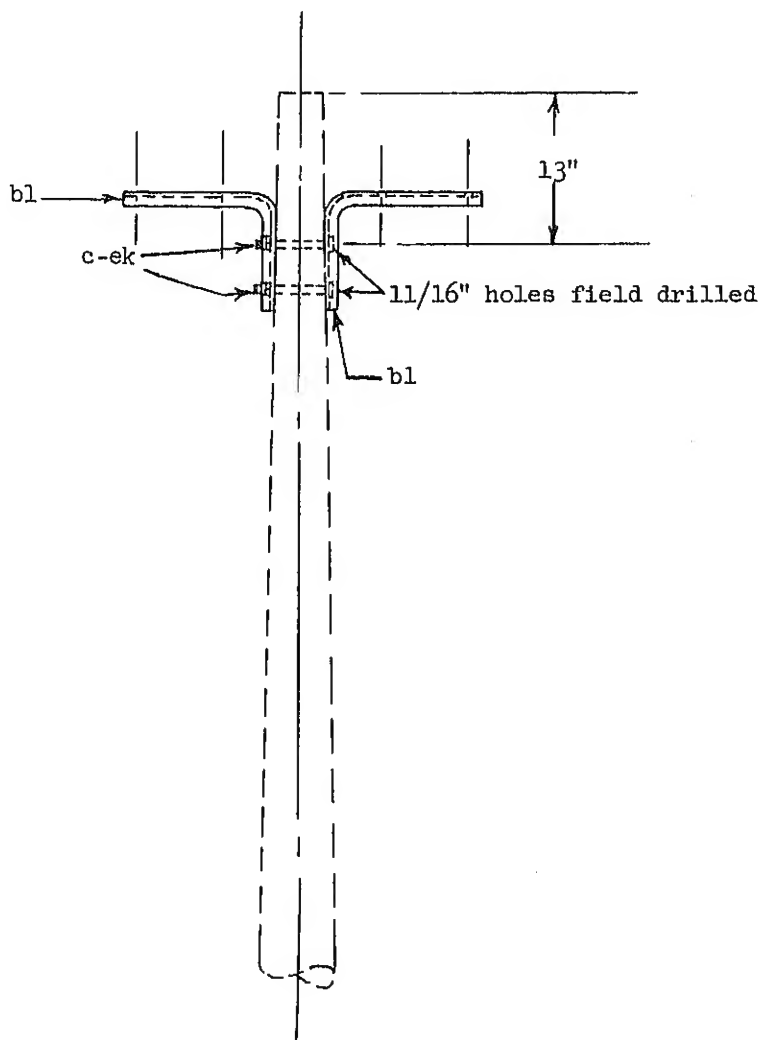
SINGLE STEEL SUPPORT BRACKET

Scale: NTS

January 18, 1962

PA1-6

Figure 1



Note: Use for corners from 0° to 20°.

USED ON NON-JOINT TANGENT OR CORNER POLES FOR 4-INCH SPACED INSULATED OPEN WIRE USING THE T-2S PIN AND INSULATOR UNITS OR THE T-22 STEEL BRACKET UNIT FOR WIRE ATTACHMENTS. SEE FIGURES 10 AND 12 FOR WIRE ATTACHMENT METHODS.

RURAL TELEPHONE CONSTRUCTION PRACTICES

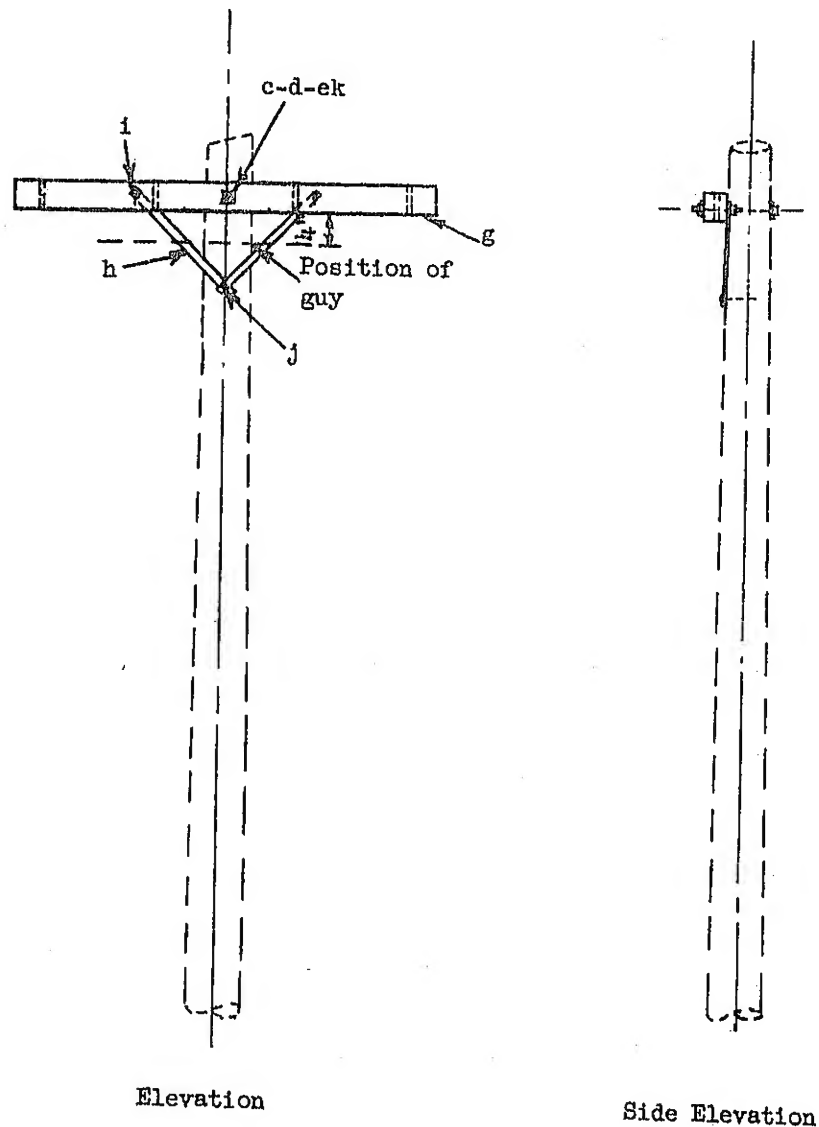
DOUBLE STEEL SUPPORT BRACKET

Scale: NTS

January 18, 1962

PA2-4

Figure 2



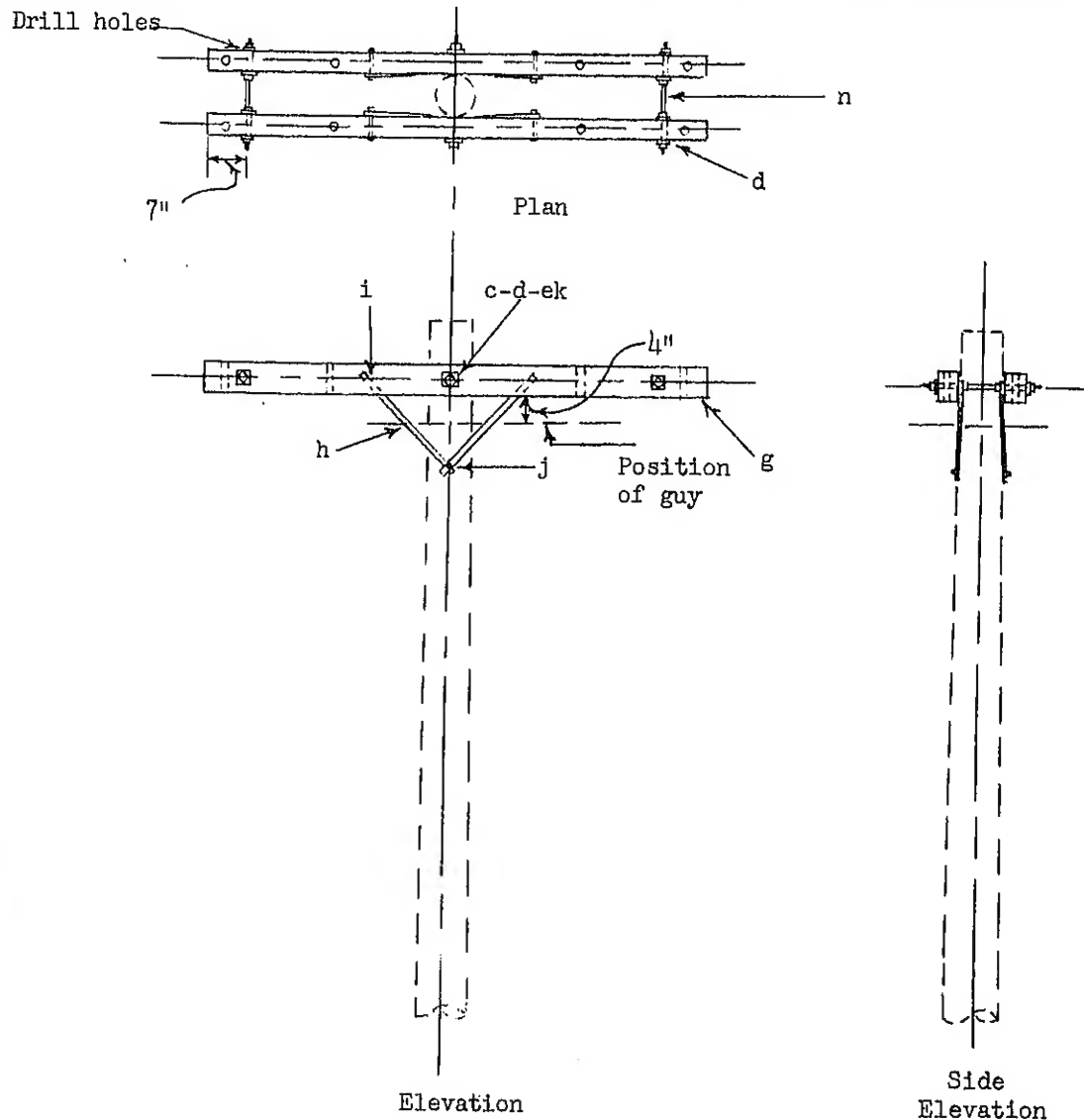
USED ON NON-JOINT OR JOINT TANGENT OR CORNER POLES FOR 4-INCH SPACED INSULATED OPEN WIRE USING T-21 OR T-22 STEEL BRACKET UNITS FOR WIRE ATTACHMENTS. LIMITATIONS: CORNERS 0 TO 35 DEGREES; 225 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR; AND 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE. SEE FIGURES 9 AND 10 FOR WIRE ATTACHMENT METHODS.

RURAL TELEPHONE CONSTRUCTION PRACTICES
SINGLE FOUR-PIN CROSSARM (TYPE 6C)
(INSULATED OPEN WIRE CONSTRUCTION)

SCALE: NTS

March 5, 1962

PB4-1



USED ON NON-JOINT OR JOINT TANGENT OR CORNER POLES FOR 4-INCH SPACED INSULATED OPEN WIRE USING T-21 STEEL BRACKET UNITS FOR WIRE ATTACHMENTS; AT ALL RAILROAD AND RIVER CROSSINGS IN SUCH LINES: AND AT DOWNWARD GRADE CHANGES EXCEEDING 10 PERCENT. LIMITATIONS: CORNERS 35 TO 60 DEGREES; VERTICAL LOAD PER CONDUCTOR 450 LBS.; AND 25 PERCENT MAXIMUM DOWNWARD GRADE CHANGE. SEE FIGURE 11 FOR WIRE ATTACHMENT METHODS.

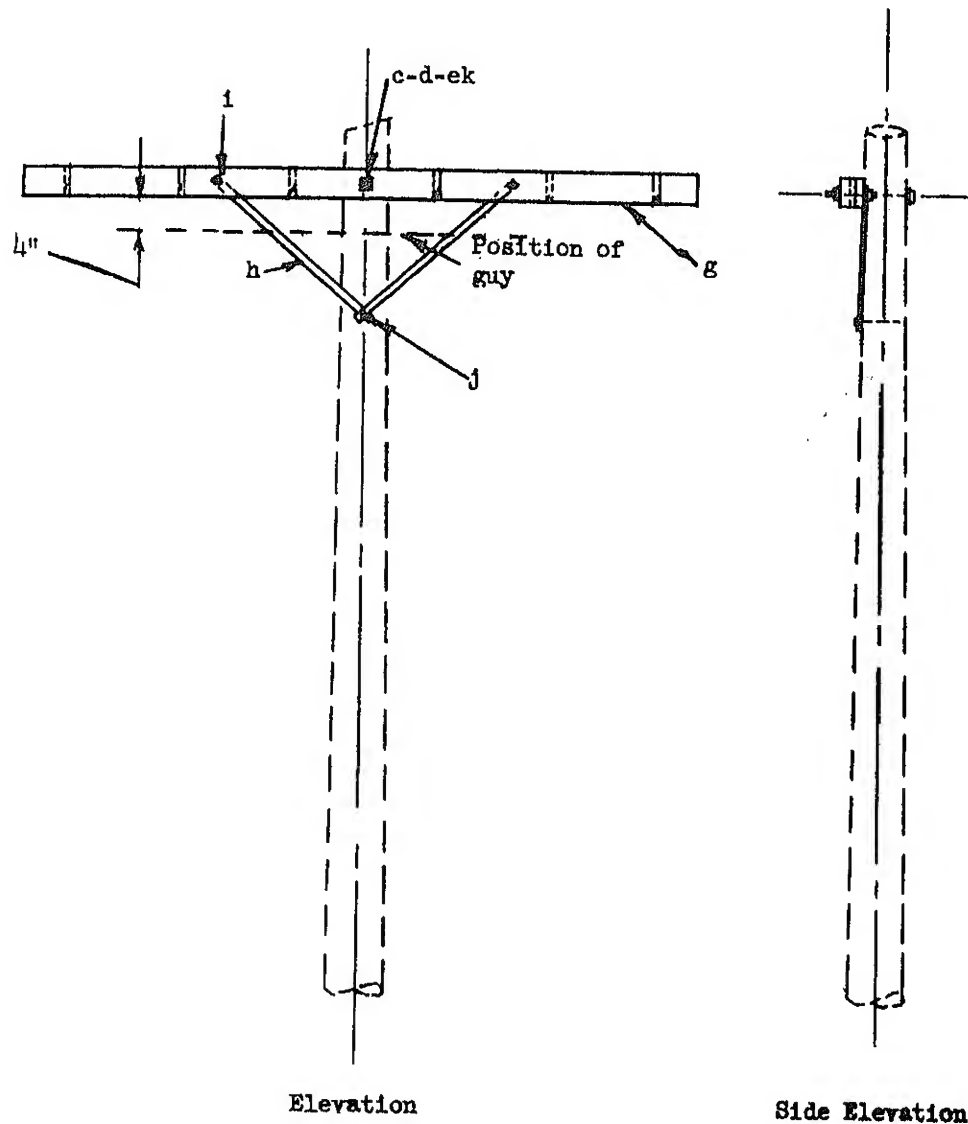
RURAL TELEPHONE CONSTRUCTION PRACTICES
DOUBLE FOUR PIN CROSSARM (TYPE 6C)
(INSULATED OPEN WIRE CONSTRUCTION)

Scale: NTS

February 24, 1962

PB4-2

Figure 4



USED ON NON-JOINT OR JOINT TANGENT OR CORNER POLES FOR 4-INCH SPACED INSULATED OPEN WIRE USING T-21 AND T-22 STEEL BRACKET UNITS FOR WIRE ATTACHMENTS. LIMITATIONS: CORNERS 0 TO 35 DEGREES; 225 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR; AND 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE. SEE FIGURES 9 AND 10 FOR WIRE ATTACHMENT METHODS.

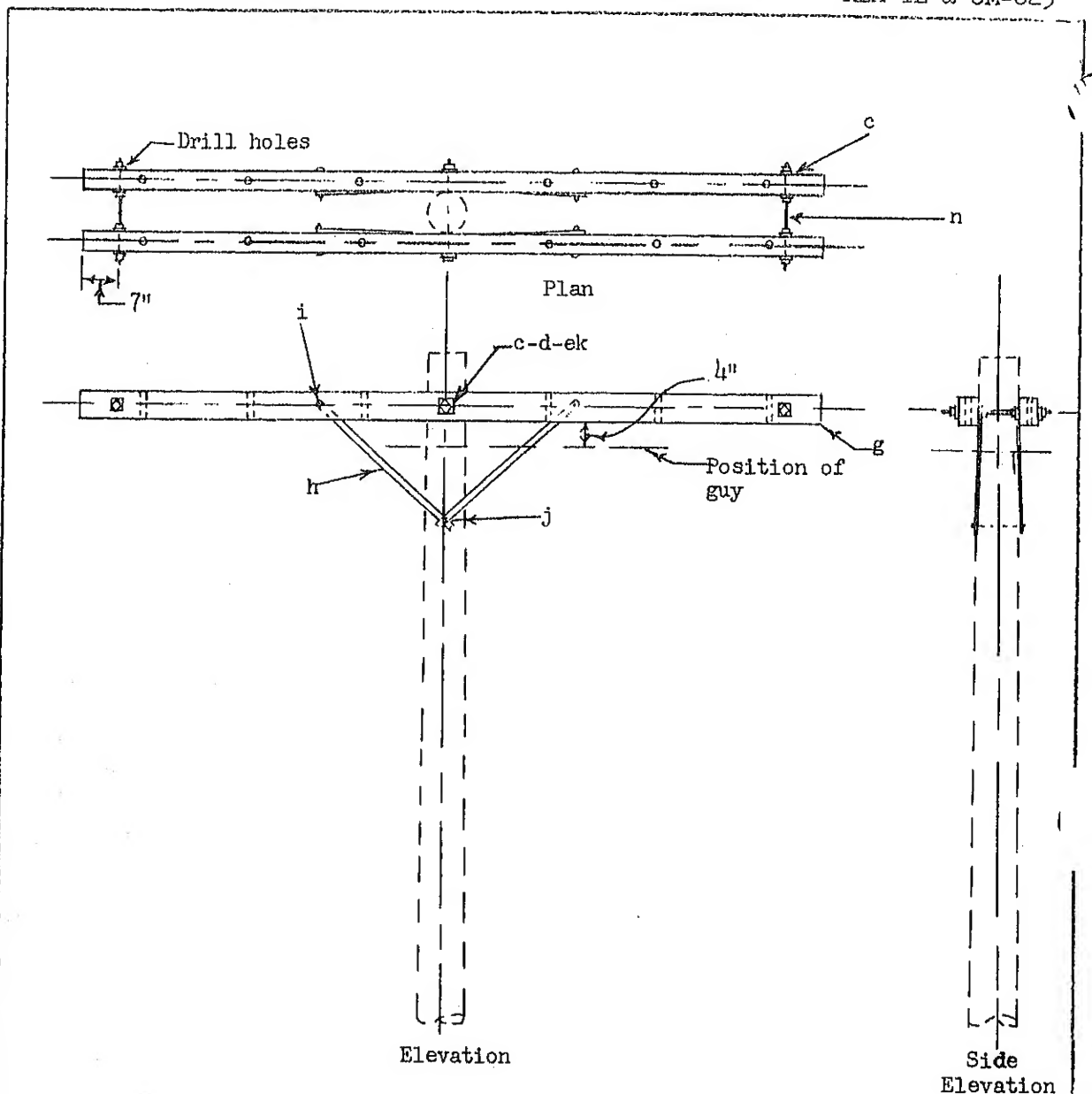
RURAL TELEPHONE CONSTRUCTION PRACTICES
SINGLE SIX-PIN CROSSARM, (TYPE 100)
(INSULATED OPEN WIRE CONSTRUCTION)

SCALE: NTS

February 20, 1962

FB6-1

Figure 5



USED ON NON-JOINT OR JOINT TANGENT OR CORNER POLES FOR 4 INCH SPACED INSULATED OPEN WIRE USING T-21 STEEL BRACKET UNITS FOR WIRE ATTACHMENTS; AT ALL RAILROAD AND RIVER CROSSINGS; AND AT DOWNWARD GRADE CHANGES EXCEEDING 10 PERCENT. LIMITATIONS: CORNERS 35 TO 60 DEGREES; MAXIMUM VERTICAL LOAD PER CONDUCTOR 450 LBS.; AND 25 PERCENT MAXIMUM DOWNWARD GRADE CHANGE. SEE FIGURE 11 FOR WIRE ATTACHMENT METHODS.

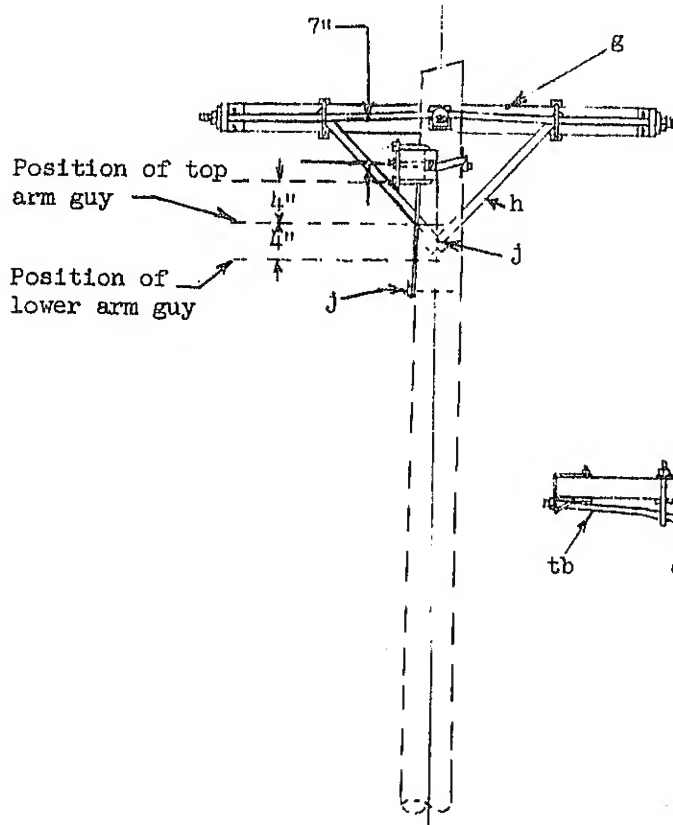
RURAL TELEPHONE CONSTRUCTION PRACTICES
DOUBLE SIX PIN CROSSARM (TYPE 10C)
(INSULATED OPEN WIRE CONSTRUCTION)

Scale: NTS

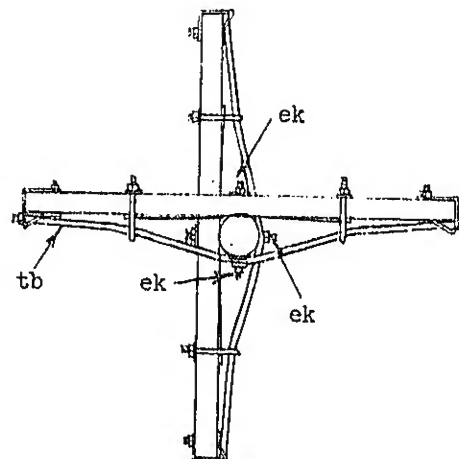
February 24, 1962

PB6-2

Figure 6



Elevation



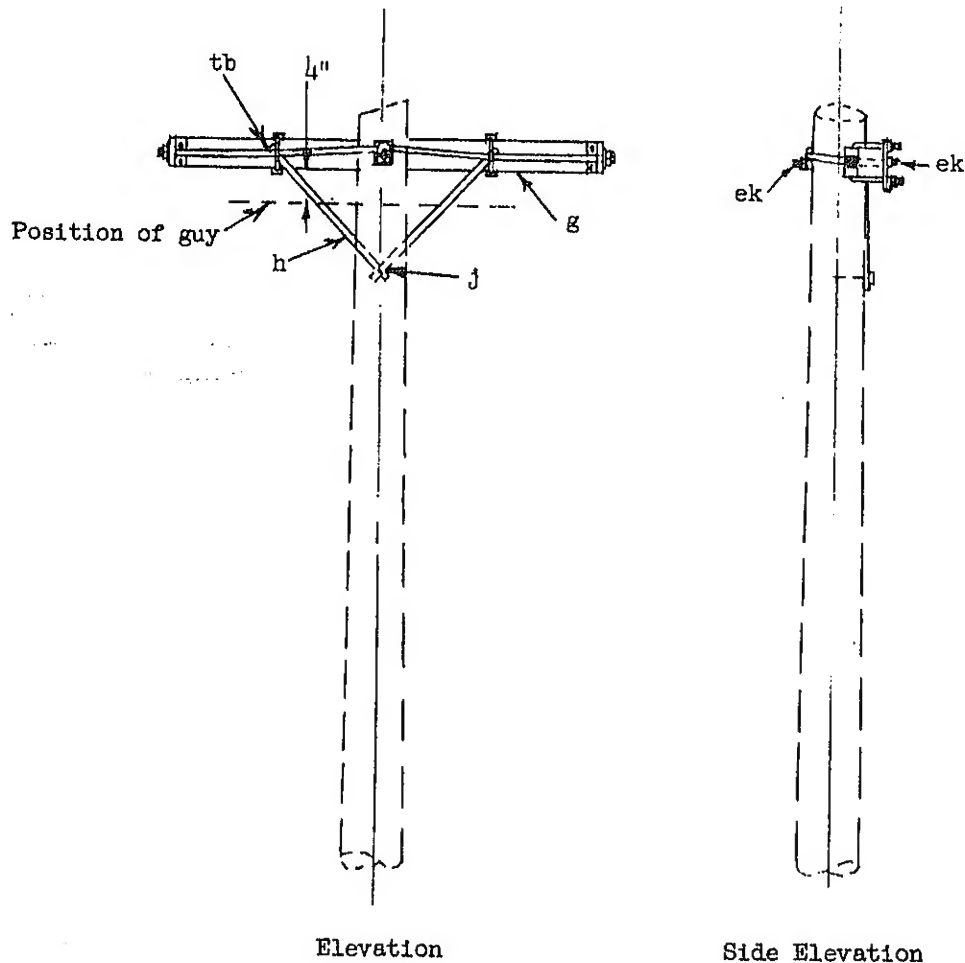
Plan

WHERE ONE OF THE TWO SPANS HAS AN UP-PULL PLACE ITS CIRCUITS ON UPPER CROSS-ARM. IF ONE HAS A DOWN-PULL PLACE ITS CIRCUITS ON LOWER ARM. IF BOTH SPANS PULL UP OR DOWN ADJUST SEPARATION OF CROSSARMS TO GIVE INCREASED SEPARATION BETWEEN THE WIRES IN THE TWO SPANS.

NOTE: All hardware items not listed in materials list are supplied with back truss.

USED ON NON-JOINT OR JOINT CORNER POLES FOR 4-INCH SPACED INSULATED OPEN WIRE IN LINES USING 6C OR 10C CROSSARMS.
LIMITATIONS: CORNERS 60 TO 90 DEGREES; MAXIMUM LONGITUDINAL PULL 1500 LBS. PER CONDUCTOR.

SCA



NOTE: All hardware items not listed in materials list are supplied with back truss.

USED ON NON-JOINT OR JOINT DEADEND POLES FOR 4-INCH SPACED INSULATED OPEN WIRE ON LINES USING 6C OR 10C CROSSARMS.
LIMITATION: MAXIMUM LONGITUDINAL PULL 1500 LBS. PER CONDUCTOR.

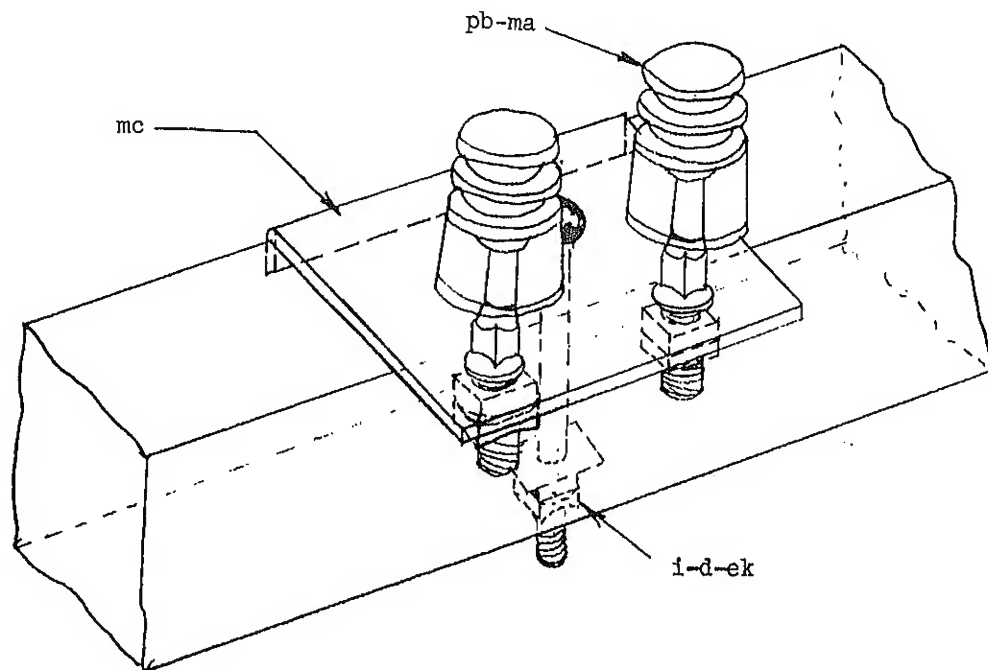
RURAL TELEPHONE CONSTRUCTION PRACTICES
DEADEND, SINGLE CROSSARM (TYPE DETE)
(INSULATED OPEN WIRE CONSTRUCTION)

SCALE: NTS

February 19, 1962

PB6-8

Figure 8



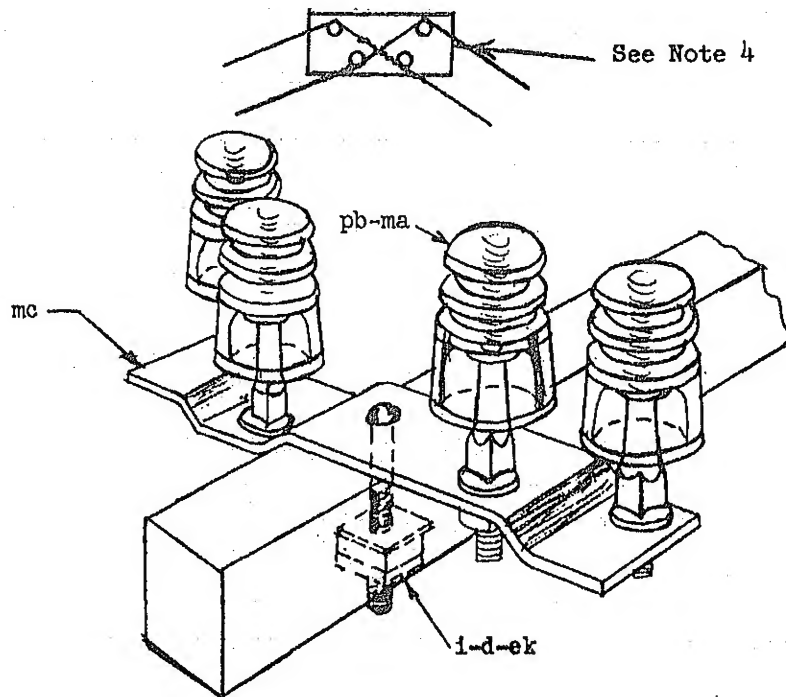
Notes:

1. Bracket is equipped with integrally mounted insulator pins by manufacturer.
2. Plastic bushings must be installed on the insulator pins in the field before installing the glass insulators.
3. Locust bushing must be used when bracket is mounted using holes drilled for wood pins.

USED AS NON-TRANSPPOSED ATTACHMENT POINTS ON 4-INCH SPACED INSULATED WIRE LINES ON 6C OR 10C SINGLE CROSSARMS; ALSO IN PAIRS ON THESE CROSSARMS AT DOUBLE-ARMED POLES, FOR EITHER TRANSPOSITION OR NON-TRANSPOSITION WIRE ATTACHMENTS. MAXIMUM CORNER 35 DEGREES ON SINGLE ARMED POLES. SEE FIGURE 11 FOR APPLICATIONS ON DOUBLE ARMED POLES FOR CORNERS 35 TO 60 DEGREES.

RU

SCALE:



Notes:

1. Bracket is equipped with integrally mounted insulator pins by manufacturers.
2. Plastic bushings must be installed on the insulator pins in the field before installing the glass insulators.
3. Locust bushing must be used when bracket is mounted using holes drilled for wood pins.
4. At corners the two pins nearest to the center of the bracket must face the angle.

USED AS POINT TRANSPOSITION ON 4-INCH SPACED INSULATED OPEN WIRE LINES ON 6C AND C CROSSARMS; CANNOT BE USED ON DOUBLE-ARMED POLES. SEE FIGURE 11 FOR LATTER SITUATION; WIRES ARE PLACED IN BOTTOM GROOVES OF ALL FOUR INSULATORS. CORNER LIMITATION, MAXIMUM 35 DEGREES.

RURAL TELEPHONE CONSTRUCTION PRACTICES
FOUR POINT TRANSPOSITION BRACKET
(INSULATED OPEN WIRE CONSTRUCTION)

SCALE: NTS

March 1, 1962

T-22

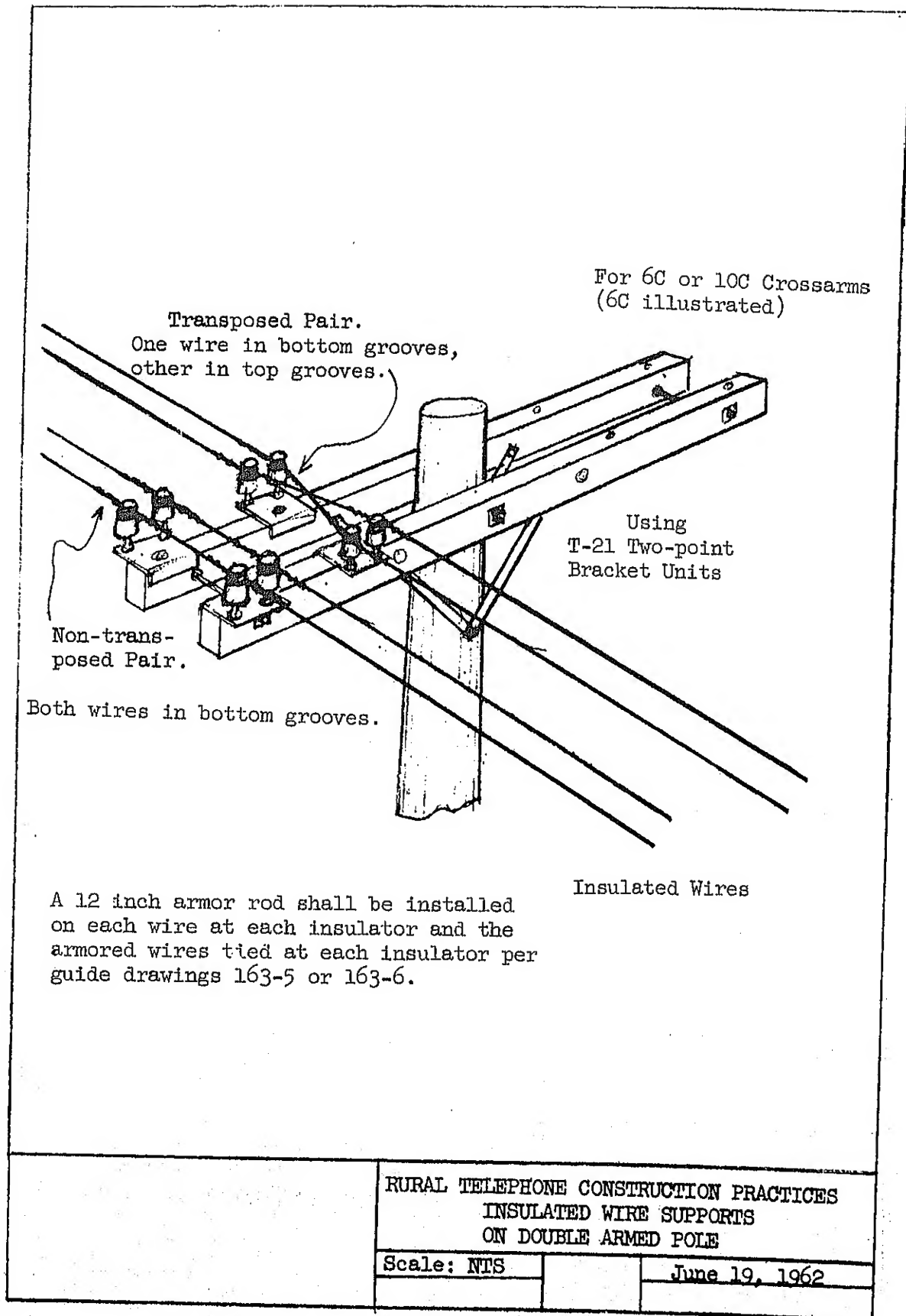


Figure 11

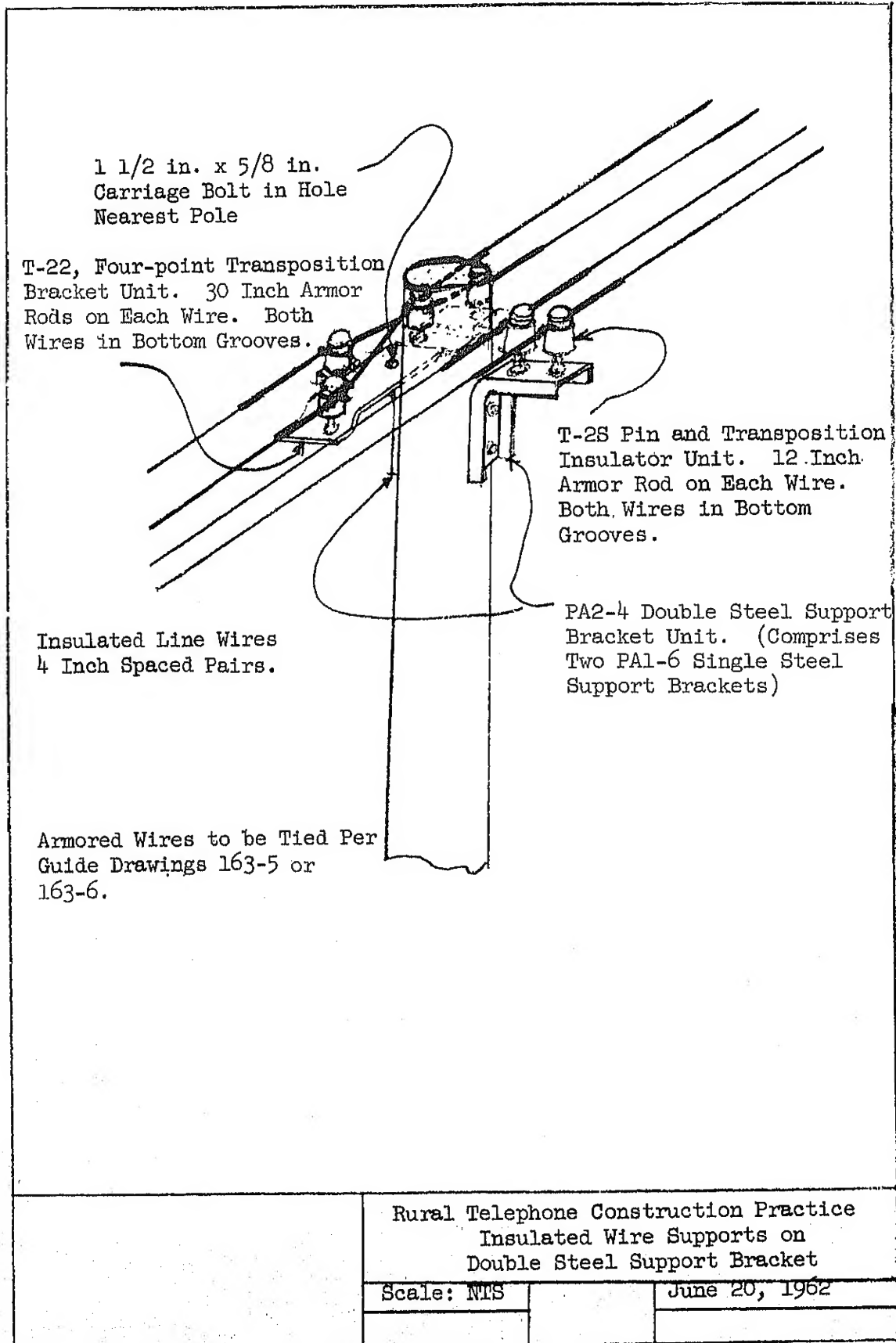
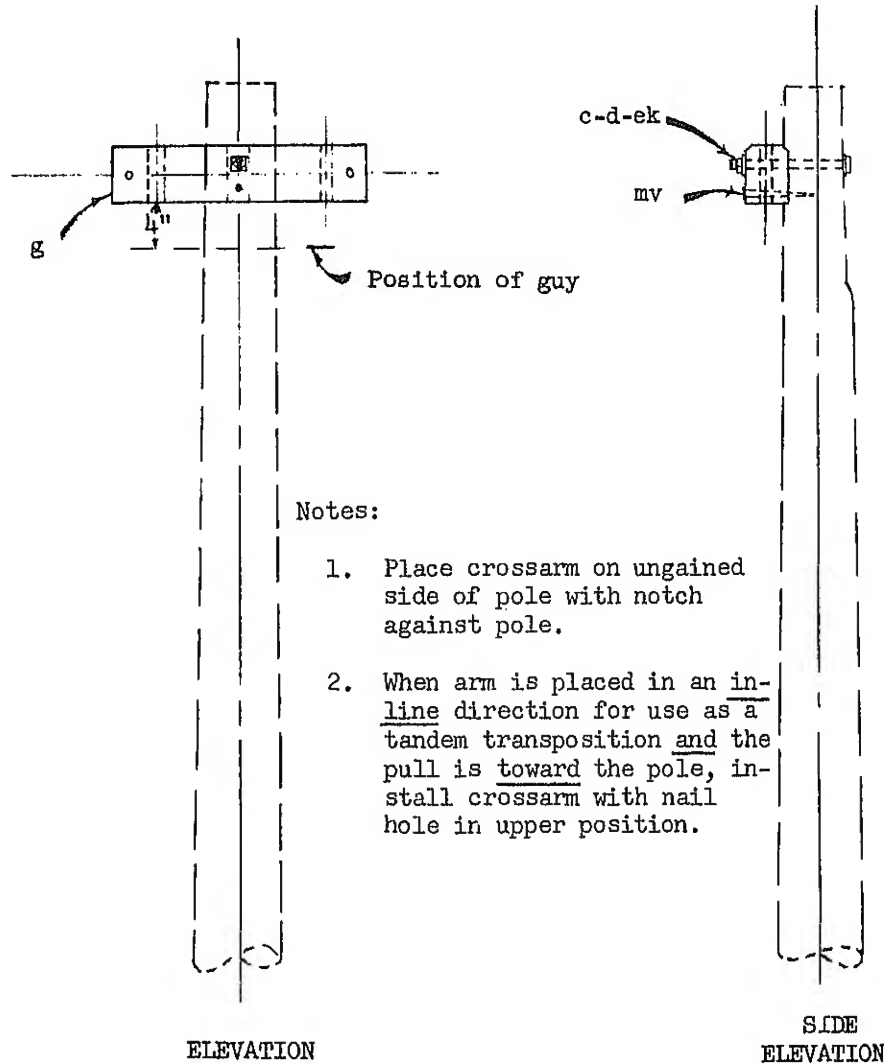


Figure 12



Notes:

1. Place crossarm on ungained side of pole with notch against pole.
2. When arm is placed in an in-line direction for use as a tandem transposition and the pull is toward the pole, install crossarm with nail hole in upper position.

USED ON NON-JOINT POLES: ALSO AS A TANDEM TRANSPOSITION WITH THE CROSSARM PLACED IN LINE WITH THE WIRES AND USING A T-3 PIN AND INSULATOR UNIT. LIMITATIONS: CORNERS NOT TO EXCEED 5 DEGREES: 300 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR: AND 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE. SEE GUIDE DRAWINGS 121-1 AND 121-4 FOR PLACEMENT OF THIS CROSSARM.

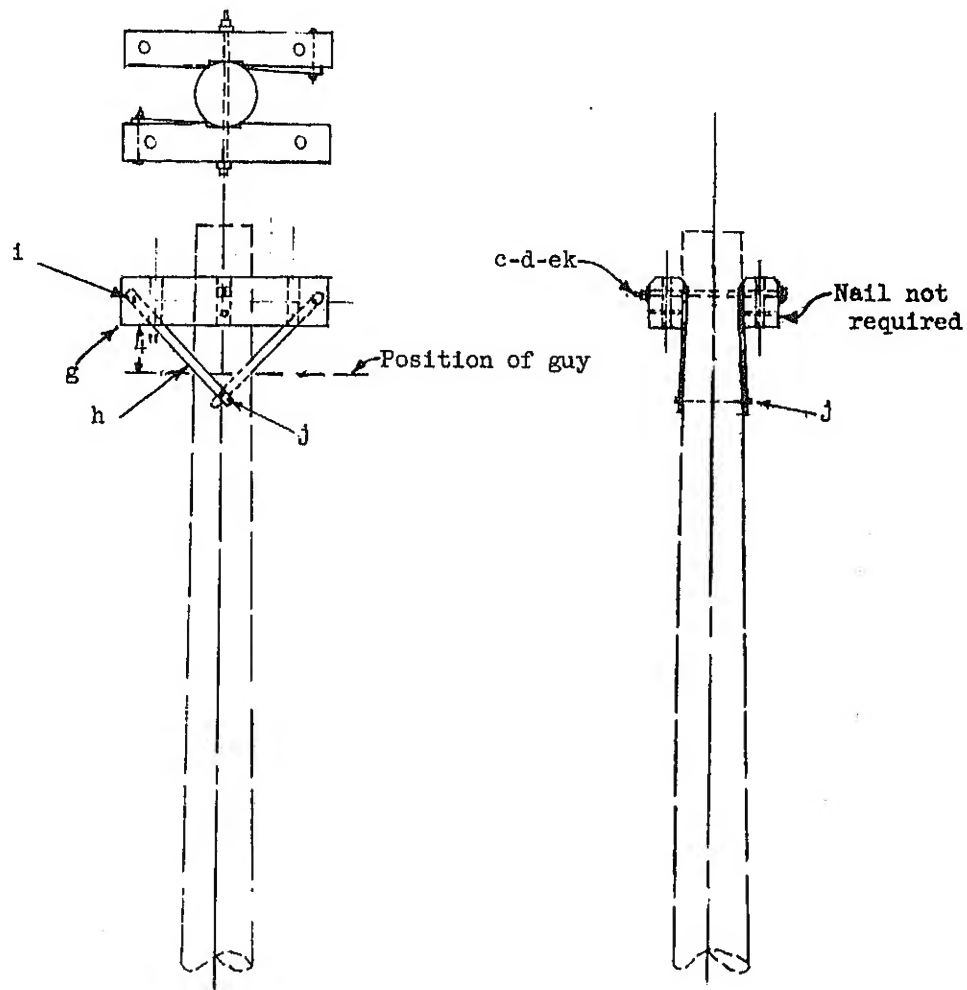
RURAL TELEPHONE CONSTRUCTION PRACTICES
TWO-PIN CROSSARM (Type 2A)

Scale NTS

February 19, 1962

PB1-1A

Figure 13



Elevation

Side Elevation

Notes:

1. At corners place both braces in a direction away from pull.
2. Place crossarms with notches against pole.

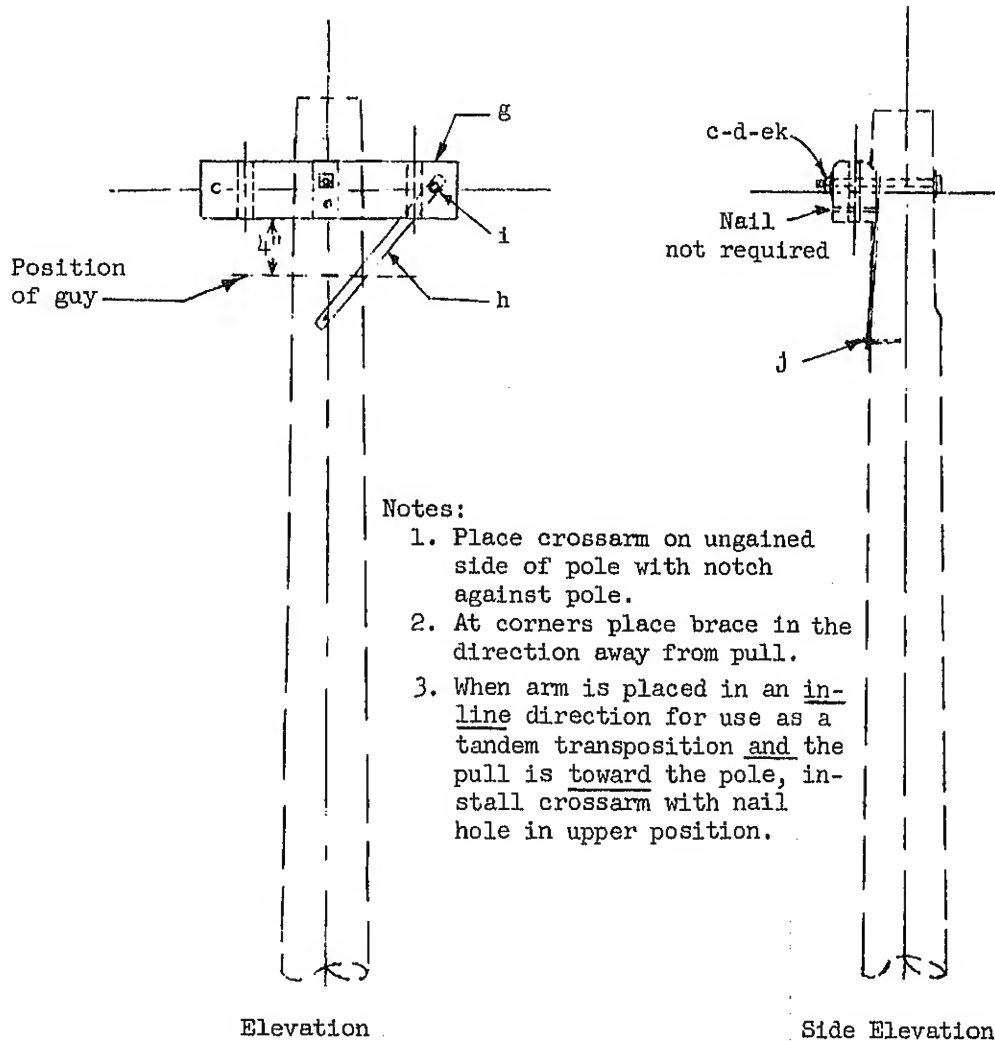
USED ON NON-JOINT POLES AT ALL RAILROAD AND RIVER CROSSINGS; ALSO AT CORNERS AND AT DOWNWARD GRADE CHANGES. LIMITATIONS: CORNERS 35 TO 60 DEGREES; 300 TO 500 LBS. VERTICAL LOAD PER CONDUCTOR; AND 10 TO 25 PERCENT DOWNWARD GRADE CHANGE.

TELEPHONE CONSTRUCTION PRACTICES

THE TWO-PIN CROSSARM (TYPE 2A)

November 13, 1958

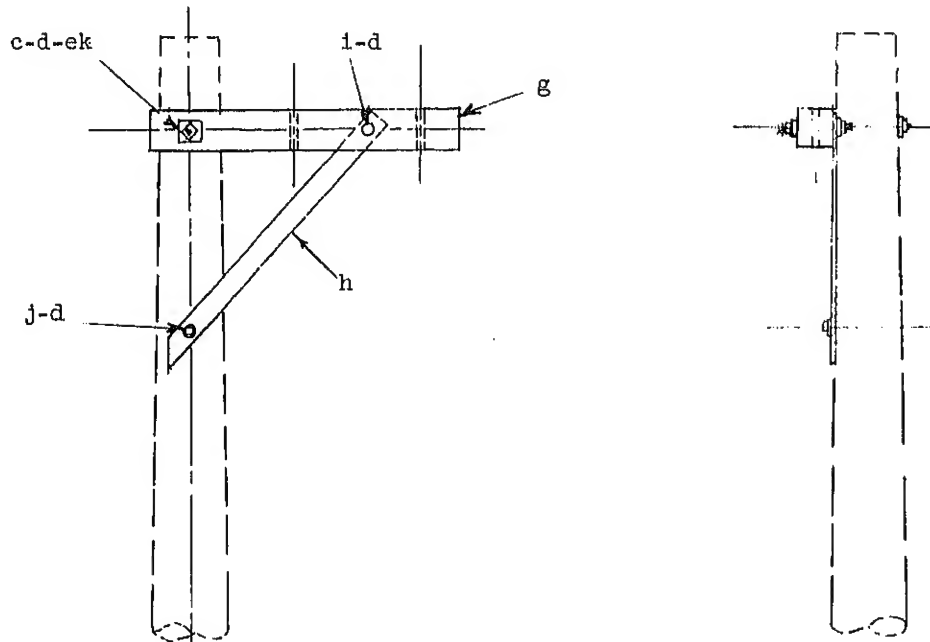
FB1-2



USED ON NON-JOINT CORNER POLES. LIMITATIONS: CORNERS 5 TO 35 DEGREES; 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE; 300 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
TWO-PIN CROSSARM (TYPE 2A)		
Scale: NTS		February 20
		PB1-3

Figure 15



----- JOINT LINES AT JOINT POLE CROSSINGS WITH POWER LINES; ON
 TO OBTAIN REQUIRED CLIMBING SPACE; AND TO SUPPORT A POINT
 POSITION BRACKET ON SINGLE CIRCUIT JOINT OR NON-JOINT LINES.
 225 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR; HORIZONTAL
 100 LBS. PER CONDUCTOR ON EITHER SINGLE PINS OR
 BRACKET; 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE.
 IS PLACED SO WIRES PULL TOWARD POLE EXCEPT IN
 S MUST STAY ON SAME SIDE OF ALL POLES. NO INCREASE
 REQUIRED FOR THIS SIDE ARM AT CORNERS.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
SINGLE TWO-PIN SIDEARM (TYPE 2B)		
Scale: NTS		January 30, 1956
		PB1-4

Figure 16

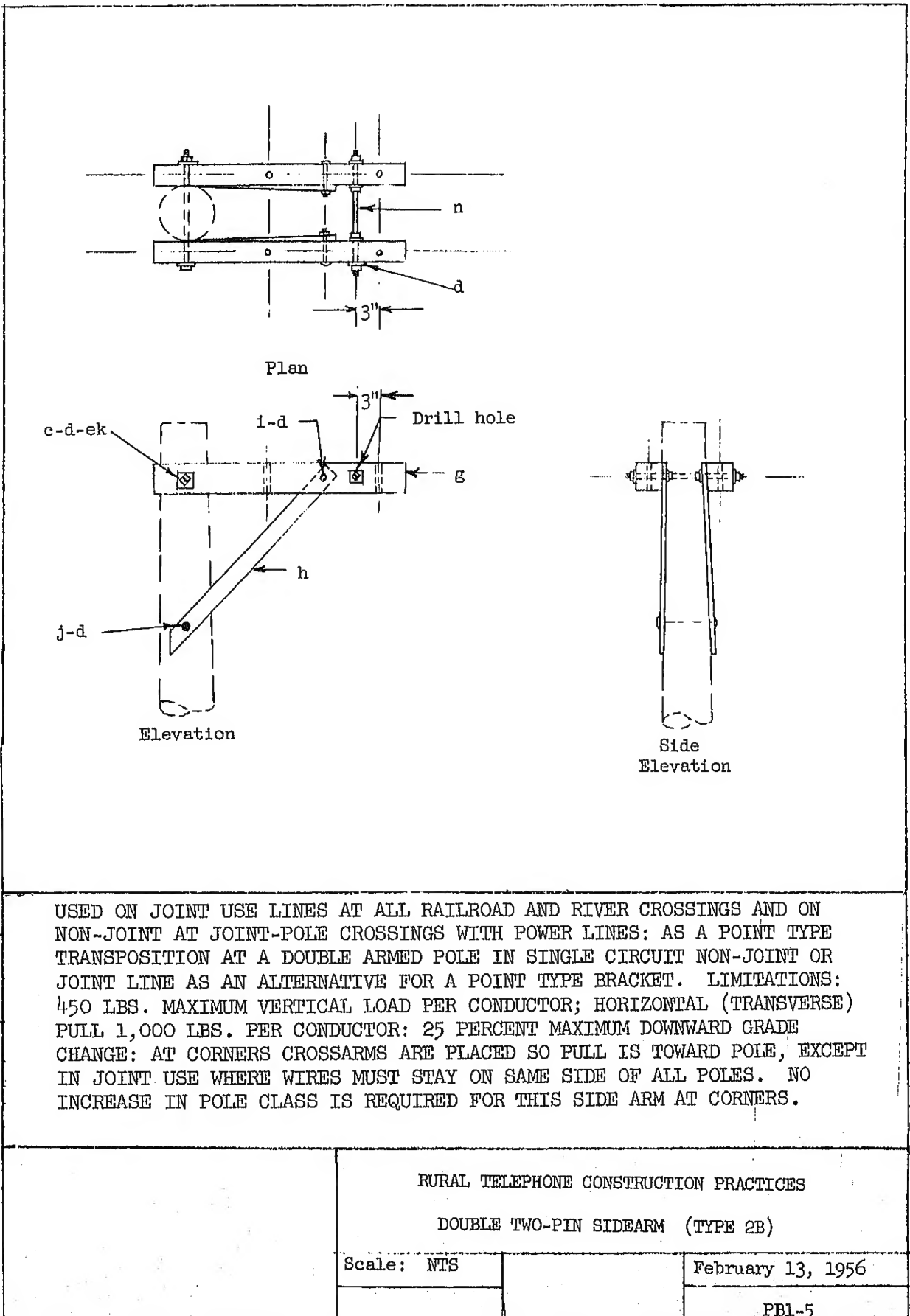
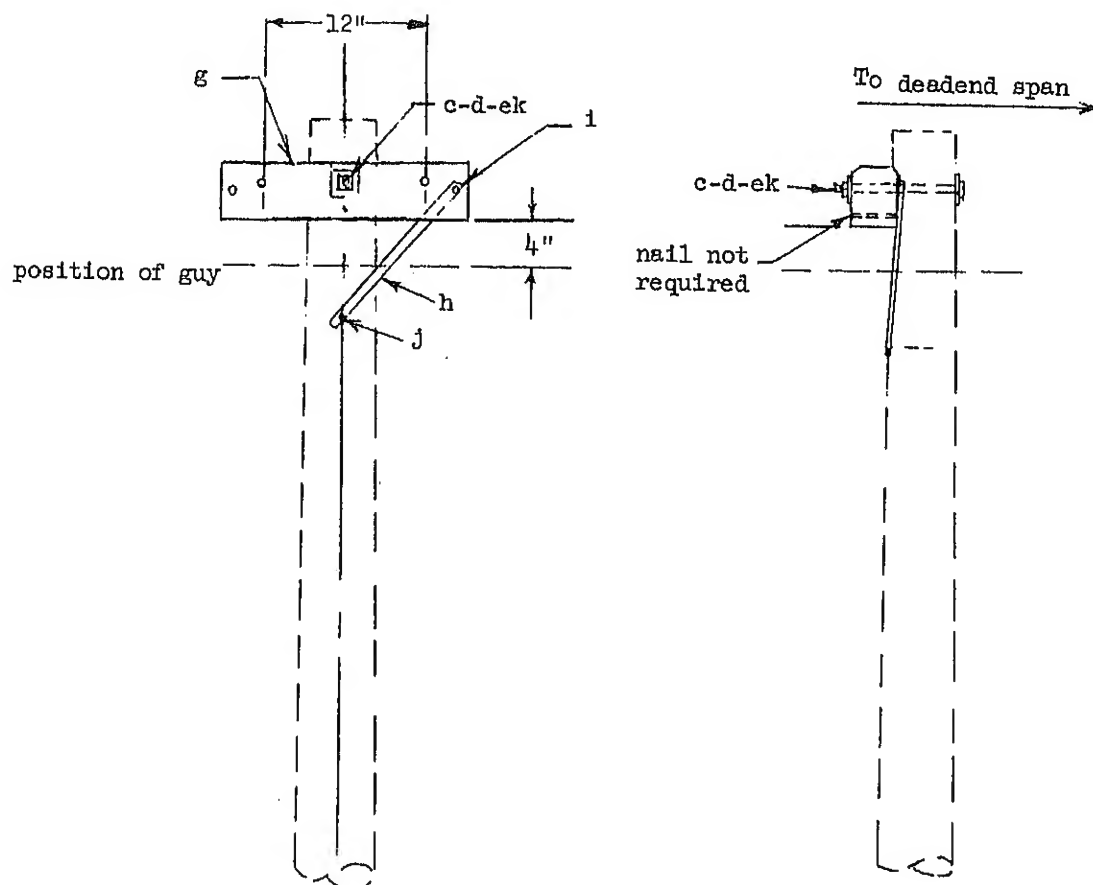


Figure 17



NOTE:

1. Brace may be installed on either end of crossarm.

USED AS DEADEND ON JOINT OR NON-JOINT POLES. LIMITATIONS: 1500 POUNDS MAXIMUM PULL PER CONDUCTOR.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
DEADEND SINGLE CROSSARM (TYPE DEP)		
Scale: NTS		February 20, 1962
		PB1-6

Figure 18

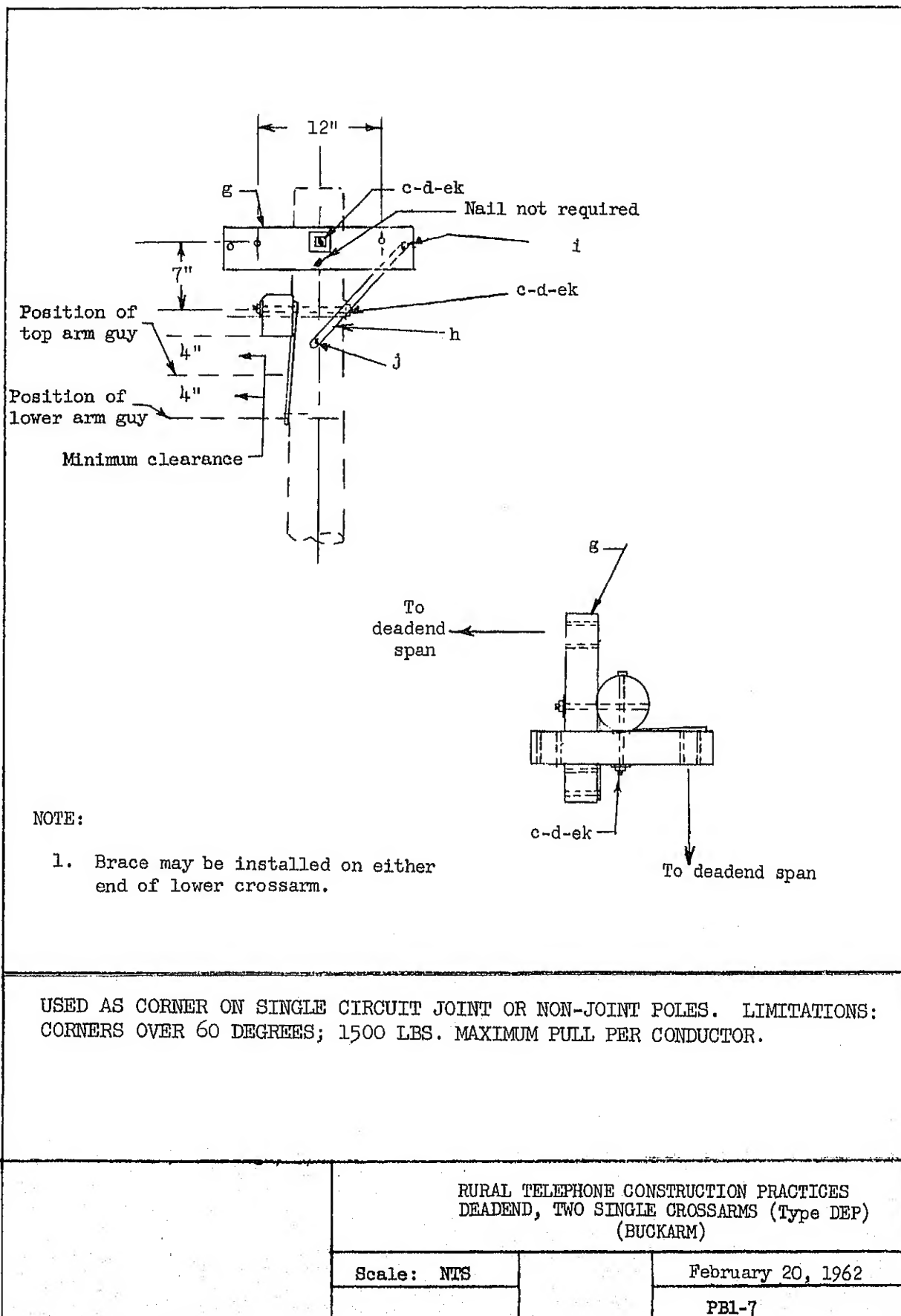
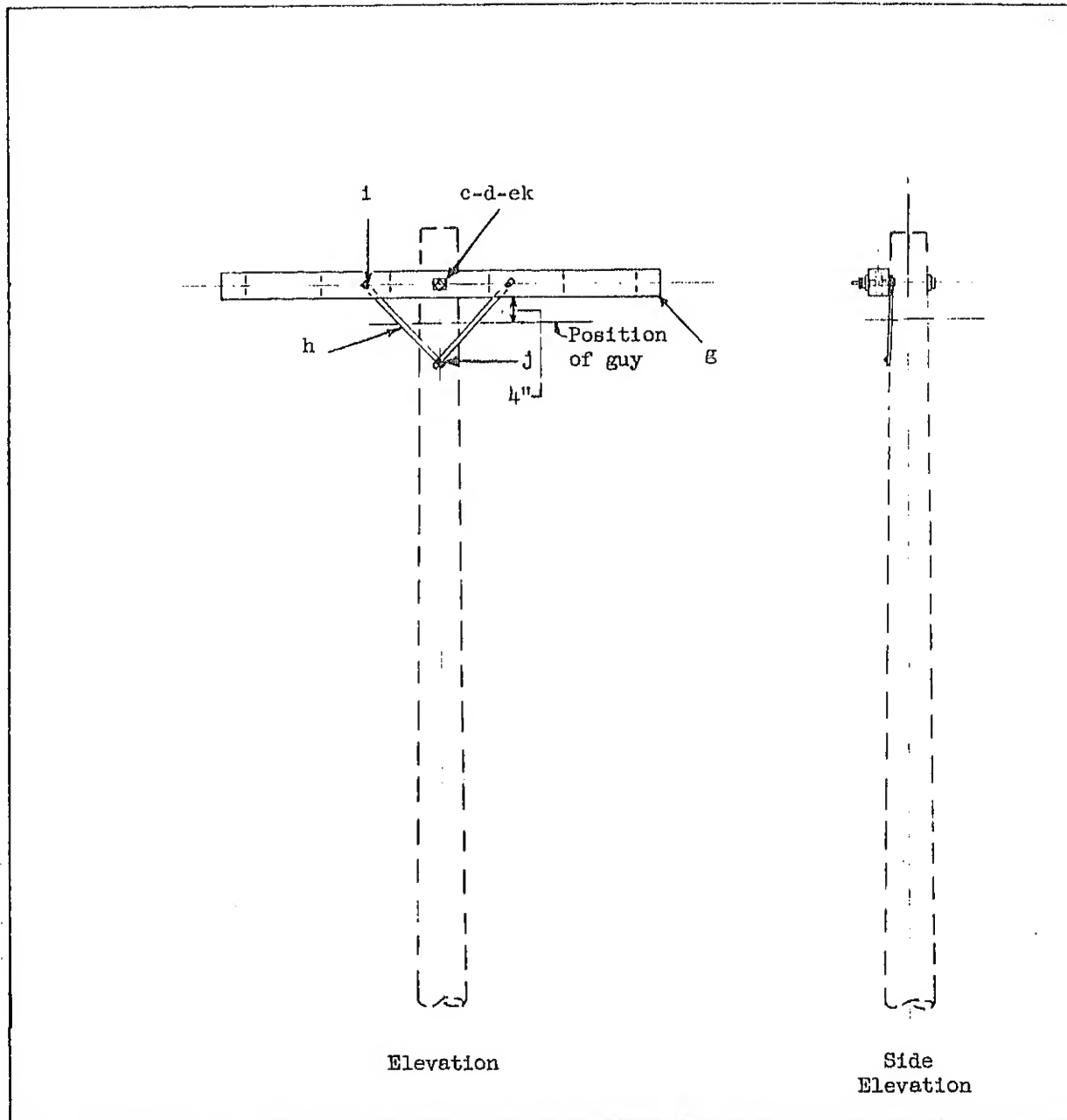


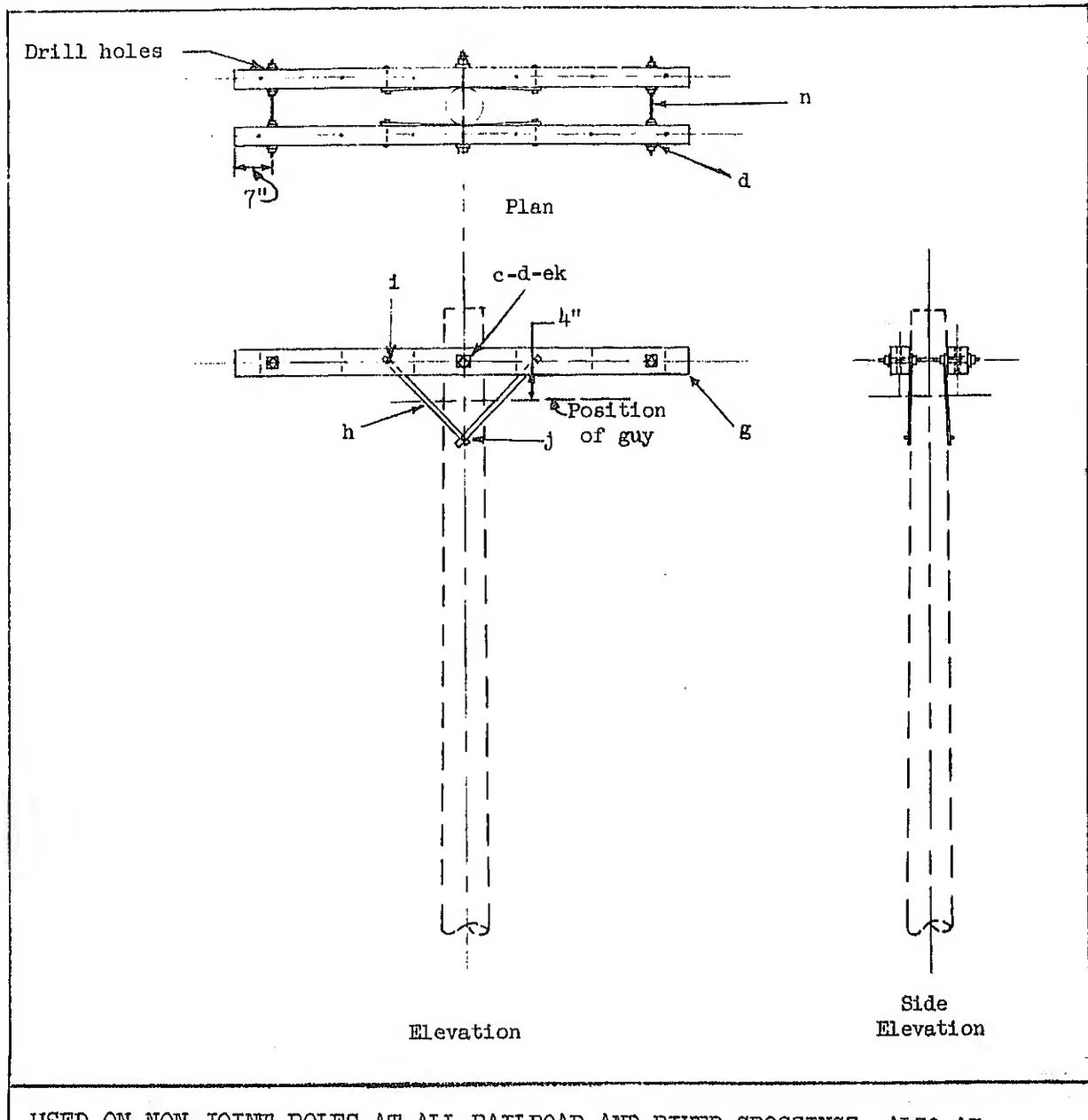
Figure 19



USED ON NON-JOINT TANGENT OR CORNER POLES. LIMITATIONS: MAXIMUM CORNER 35 DEGREES; 225 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR; 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
SINGLE SIX-PIN CROSSARM (TYPE 6A)		
Scale: NTS		Sept. 26, 1958
		PB3-1

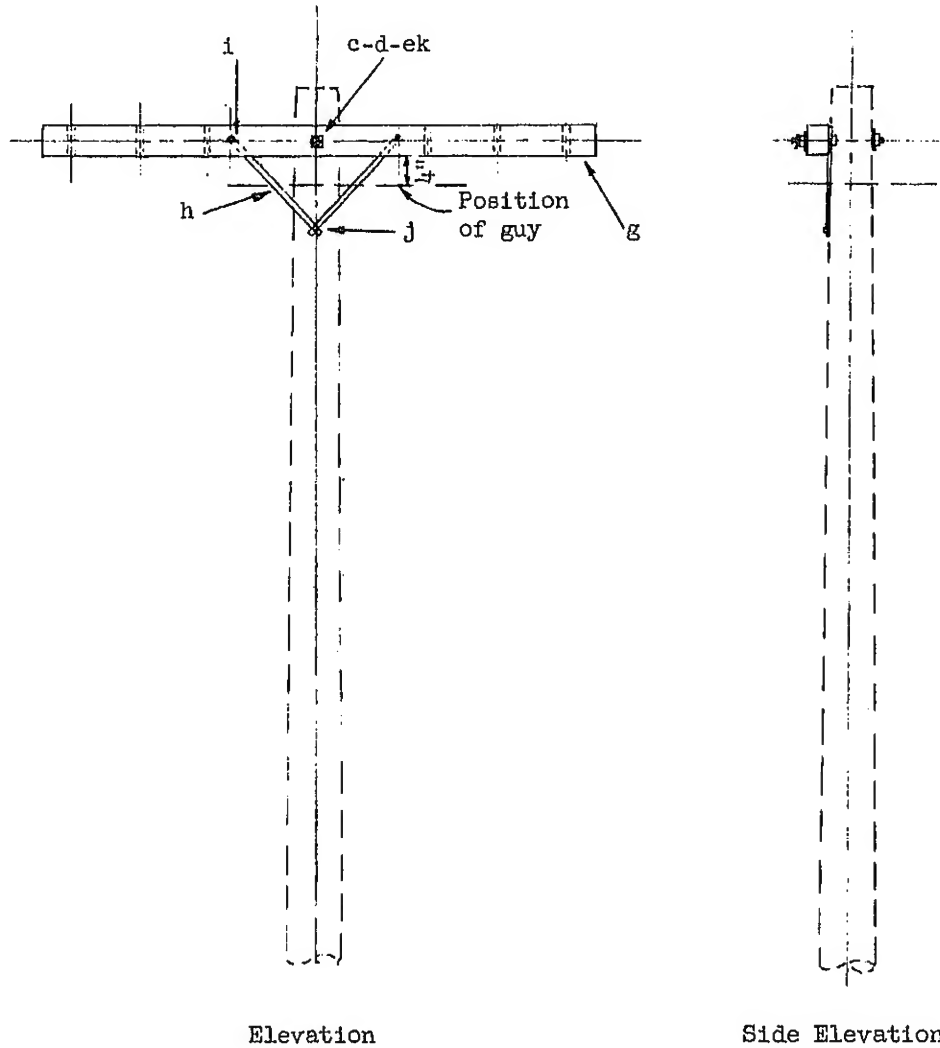
Figure 20



USED ON NON-JOINT POLES AT ALL RAILROAD AND RIVER CROSSINGS; ALSO AT CORNERS AND FOR DOWNWARD GRADE CHANGES, EXCEEDING 10 PERCENT. LIMITATIONS: CORNERS 35 TO 60 DEGREES; VERTICAL LOAD PER CONDUCTOR 225 TO 450 LBS. AND 25 PERCENT MAXIMUM DOWNWARD GRADE CHANGE.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
DOUBLE SIX PIN CROSSARM (TYPE 6A)		
Scale: NTS		September 22, 1958
		PB3-2

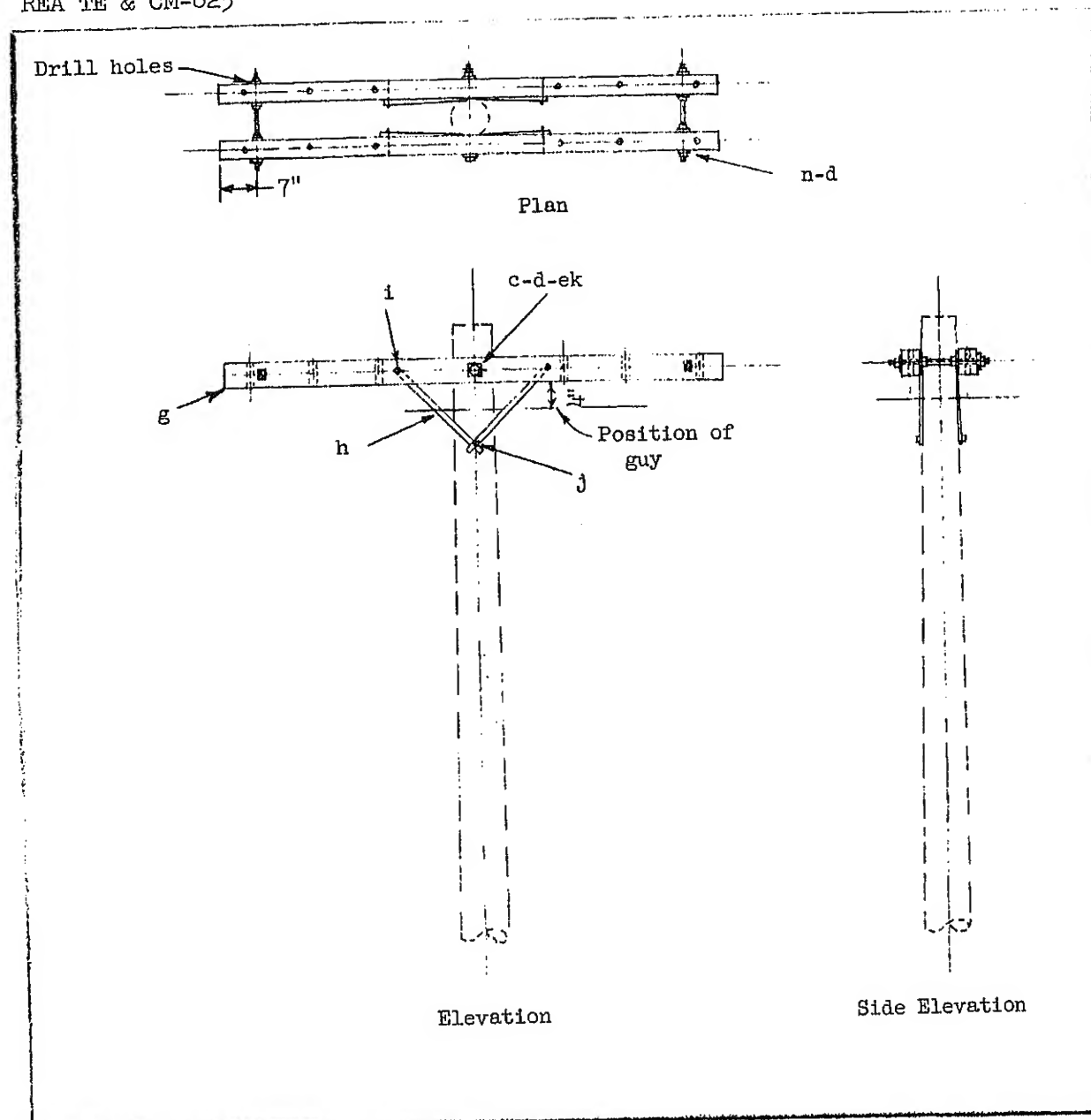
Figure 21



USED ON POLES AT JOINT POLE CROSSINGS WITH POWER LINES; ALSO USED FOR TANGENT AND CORNER POLES IN JOINT LINES AND IS PERMISSIBLE FOR NON-JOINT EXTENSIONS TO JOINT LINES. LIMITATIONS: MAXIMUM CORNER 35 DEGREES; 225 POUNDS MAXIMUM VERTICAL LOAD PER CONDUCTOR; TEN PERCENT MAXIMUM DOWNWARD GRADE CHANGE.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
SINGLE SIX-PIN CROSSARM (TYPE 6B)		
Scale: NTS		December 7, 1954
		PB3-3

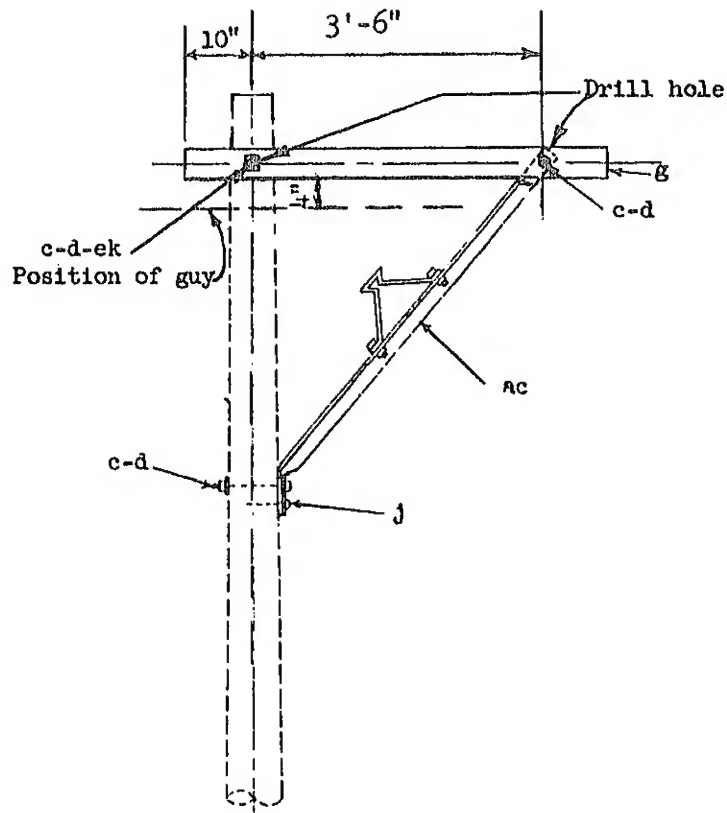
Figure 22



USED ON JOINT POLES IF DOUBLE ARMS ARE NECESSARY; ALSO ON JOINT LINES AT ALL RAILROAD AND RIVER CROSSINGS AND IS PERMISSIBLE ON NON-JOINT EXTENSIONS TO JOINT LINES; ALSO AT CORNERS AND FOR DOWNWARD GRADE CHANGES EXCEEDING TEN PERCENT. LIMITATIONS: CORNERS 35 TO 60 DEGREES; VERTICAL LOAD PER CONDUCTOR 225 TO 450 POUNDS, AND 25 PERCENT MAXIMUM DOWNWARD GRADE CHANGE.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
DOUBLE SIX-PIN CROSSARM (TYPE 6B)		
Scale: NTS		January 24, 1957
		PB3-4

Figure 23



USED ON NON-JOINT POLES TO AVOID TREES OR OTHER OBSTRUCTIONS.
 LIMITATIONS: MAXIMUM CORNER FIVE DEGREES WITHOUT GUY; 225 POUNDS
 MAXIMUM VERTICAL LOAD PER CONDUCTOR; TEN PERCENT MAXIMUM DOWNWARD
 GRADE CHANGE. REQUIRES POLE ONE CLASS LARGER THAN OTHERS IN NON-
 JOINT LINES.

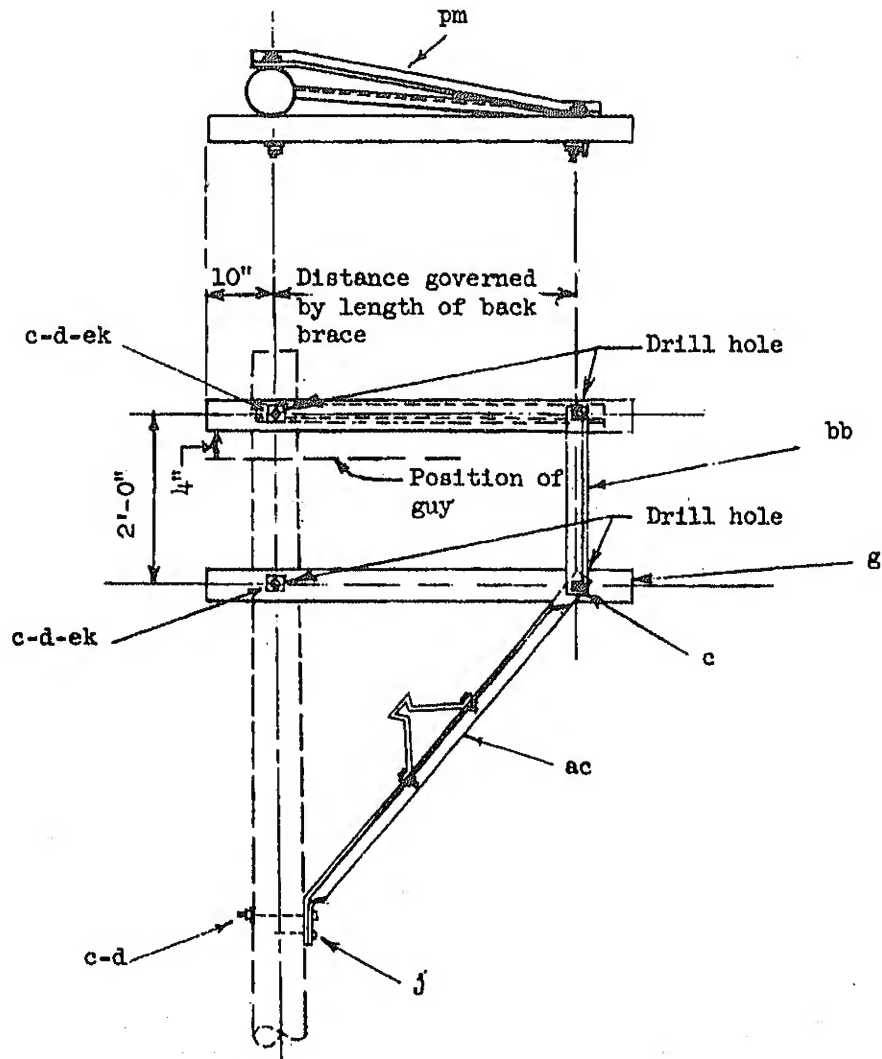
RURAL TELEPHONE CONSTRUCTION PRACTICES

SINGLE SIX PIN SIDEARM (TYPE 6A)

Scale: NTS

Sept. 20, 1960
 PB3-7

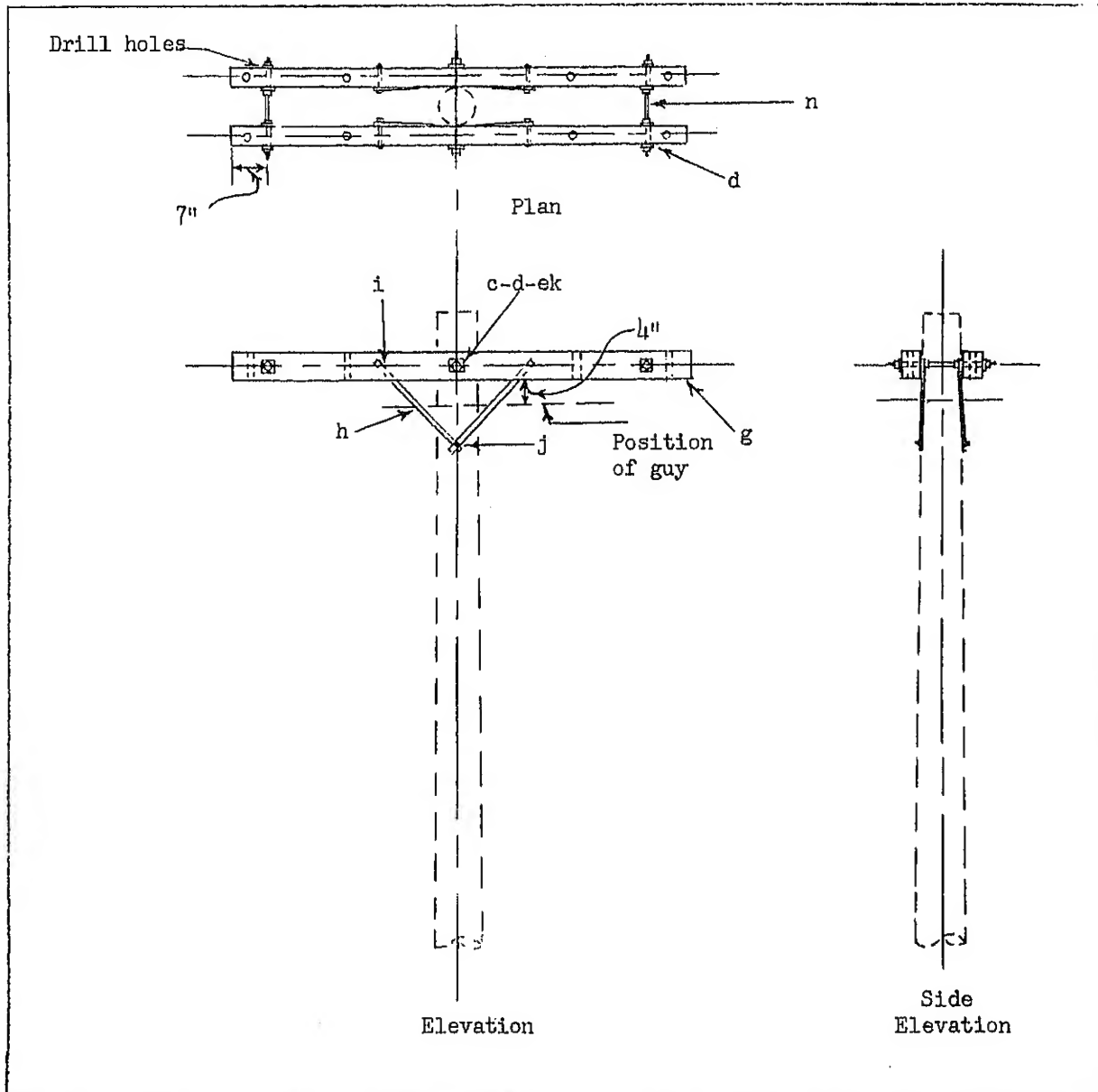
Figure 24



USED ON NON-JOINT POLES TO AVOID TREES OR OTHER OBSTRUCTIONS.
 LIMITATIONS: MAXIMUM CORNER FIVE DEGREES WITHOUT GUY; 225 POUNDS
 MAXIMUM VERTICAL LOAD PER CONDUCTOR; TEN PERCENT MAXIMUM DOWNWARD
 GRADE CHANGE; REQUIRES POLE ONE CLASS LARGER THAN OTHERS IN NON-JOINT
 LINES.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
TWO SINGLE 6-PIN SIDE ARMS (TYPE 6A)		
Scale: NTS		January 18, 1
		PB3-8

Figure 25



USED ON NON-JOINT TANGENT OR CORNER POLES. LIMITATIONS: MAXIMUM CORNER 35 DEGREES; 225 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR; 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE.

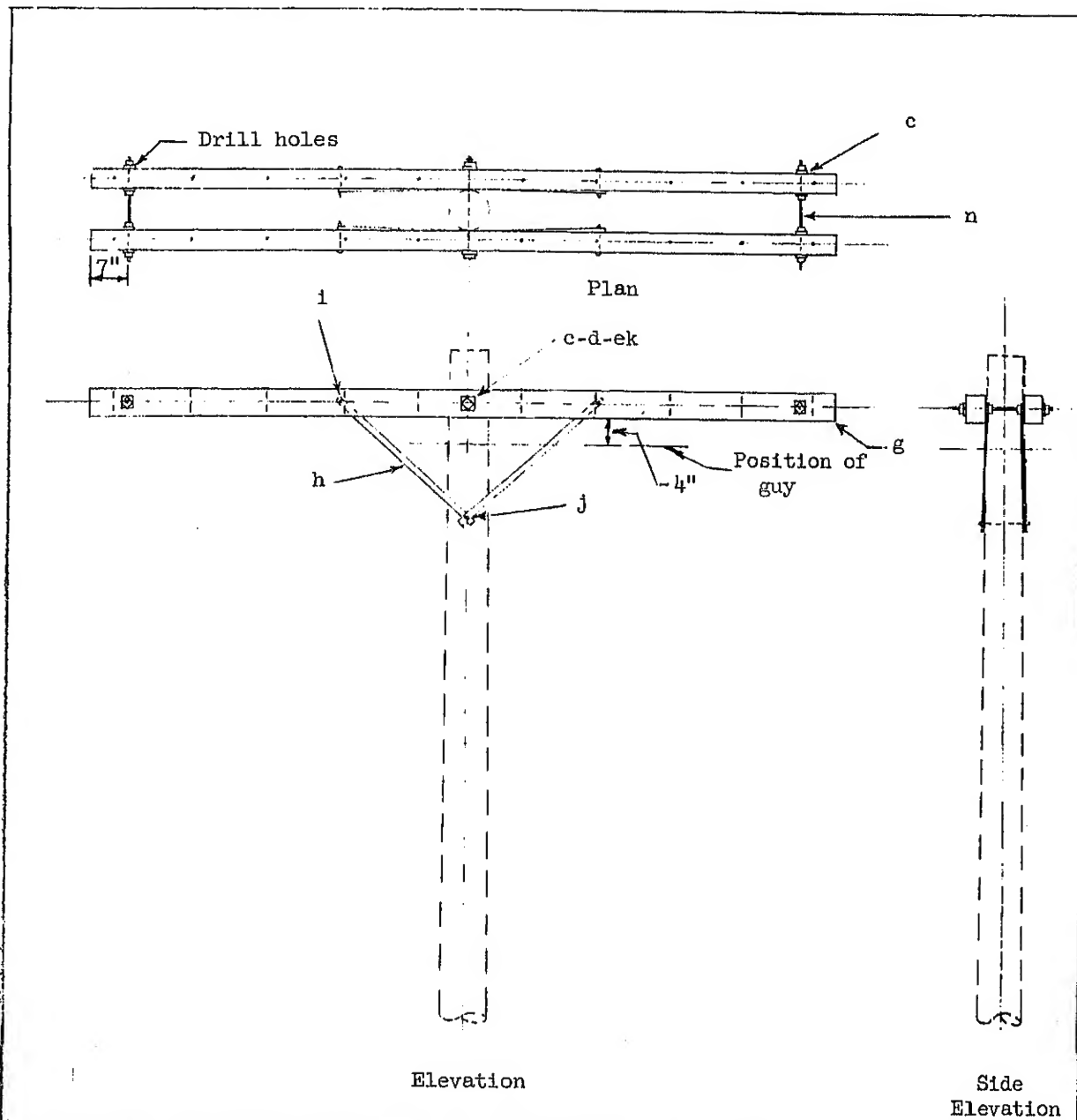
RURAL TELEPHONE CONSTRUCTION PRACTICES
DOUBLE FOUR PIN CROSSARM (TYPE 6C)
(INSULATED OPEN WIRE CONSTRUCTION)

Scale: NTS

February 24, 1962

PB4-2

Figure 26



USED ON NON-JOINT POLES AT ALL RAILROAD AND RIVER CROSSINGS; ALSO AT CORNERS AND FOR DOWNWARD GRADE CHANGES EXCEEDING 10 PERCENT. LIMITATIONS: CORNERS 35 TO 60 DEGREES; VERTICAL LOAD PER CONDUCTOR 225 TO 450 LBS., AND 25 PERCENT MAXIMUM DOWNWARD GRADE CHANGE.

RURAL TELEPHONE CONSTRUCTION PRACTICES

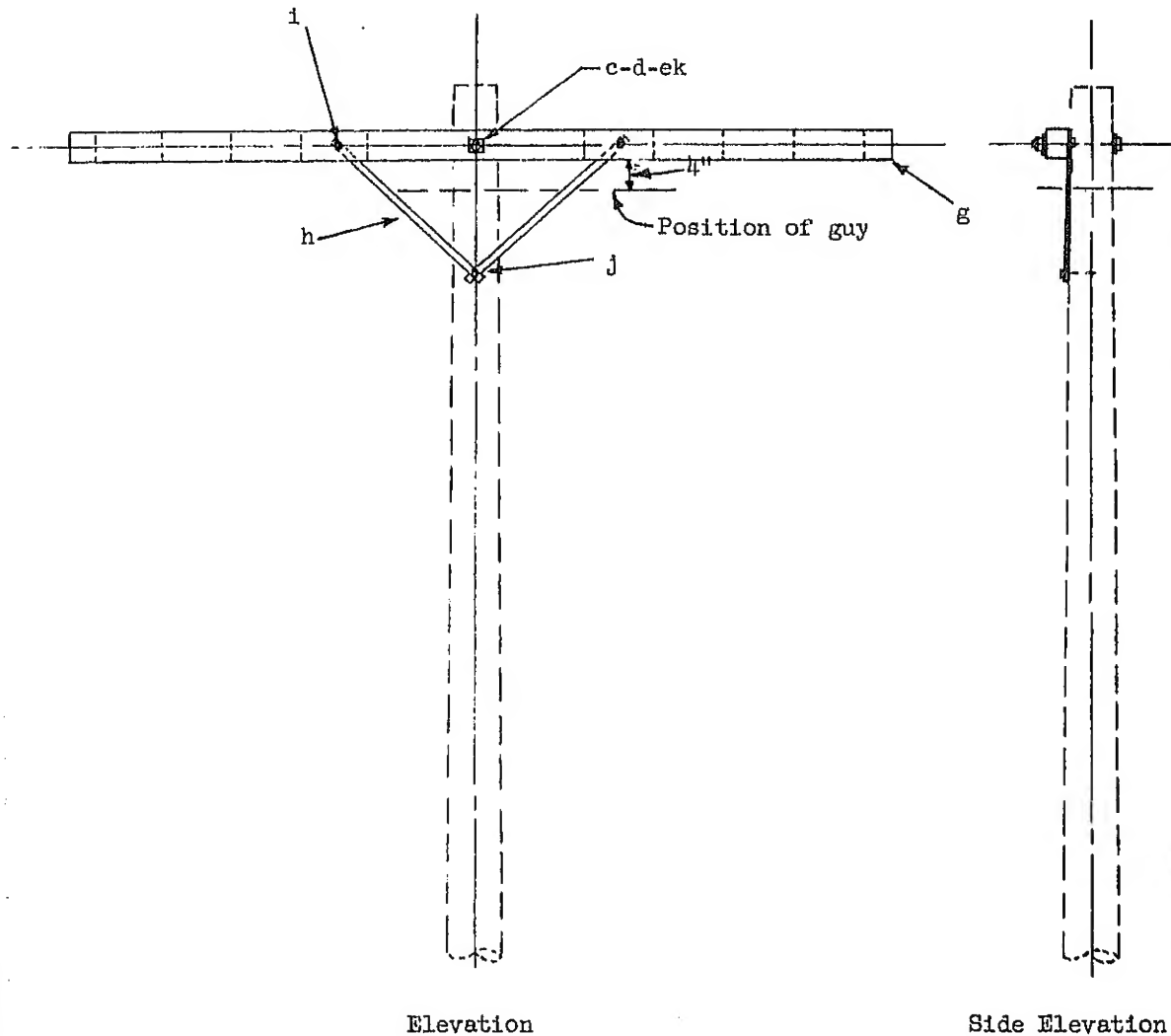
DOUBLE TEN-PIN CROSSARM (TYPE 10A)

Scale: NTS

January 24, 1957

PR5-2

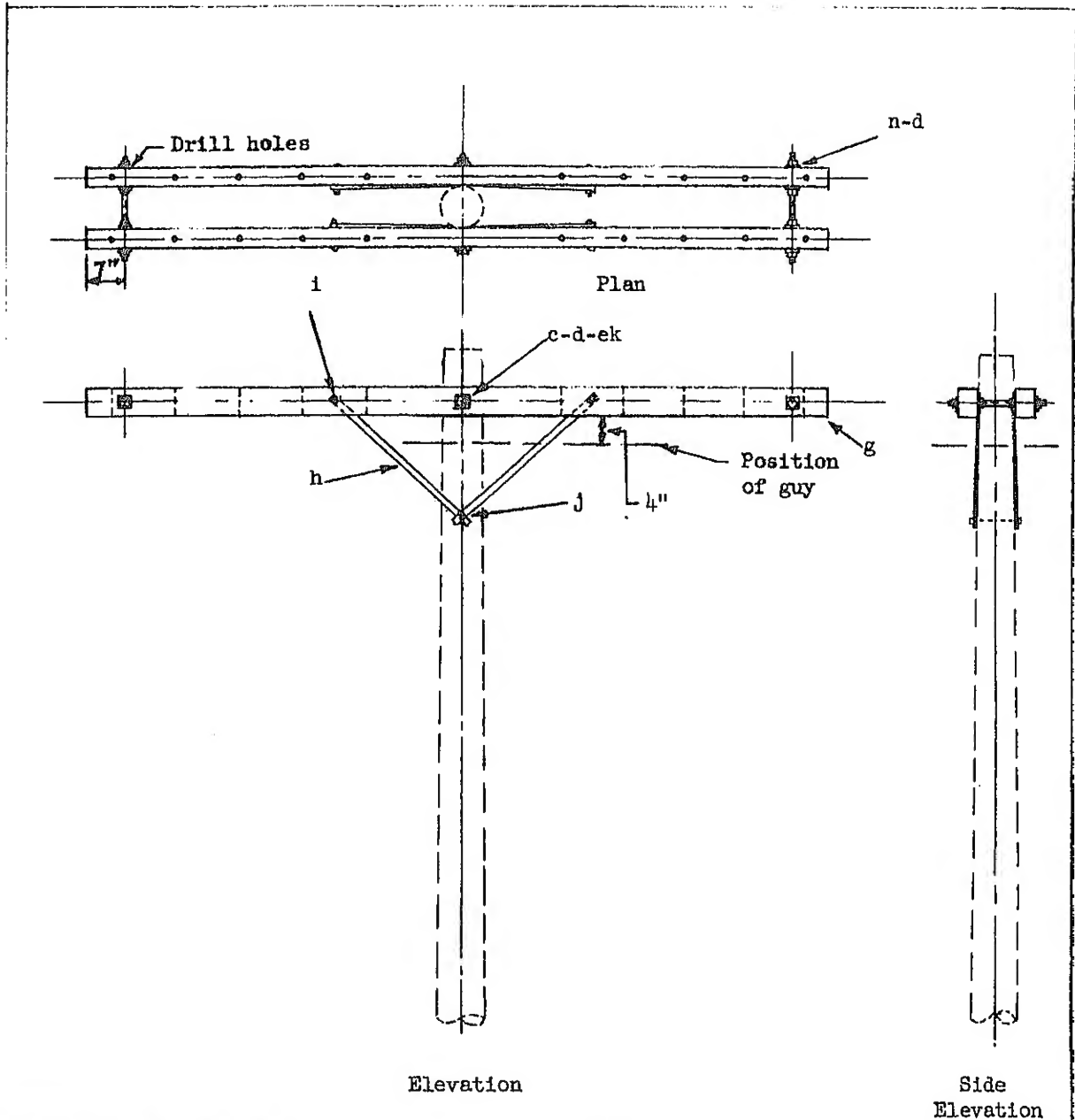
Figure 27



USED ON NON-JOINT POLES AT JOINT POLE CROSSINGS WITH POWER LINES; ALSO USED ON TANGENT AND CORNER POLES IN JOINT LINES, AND IS PERMISSIBLE FOR NON-JOINT EXTENSIONS TO JOINT LINES. LIMITATIONS: MAXIMUM CORNER 35 DEGREES; 225 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR; 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
SINGLE TEN-PIN CROSSARM (TYPE 10B)		
Scale: NTS		December 3, 1954
		PB5-3

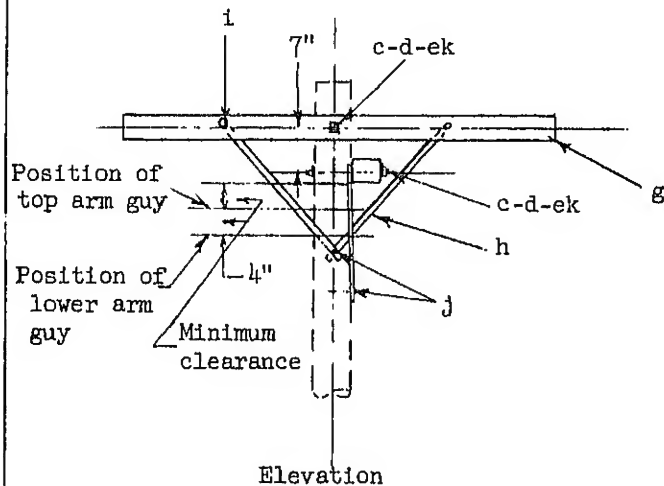
Figure 28



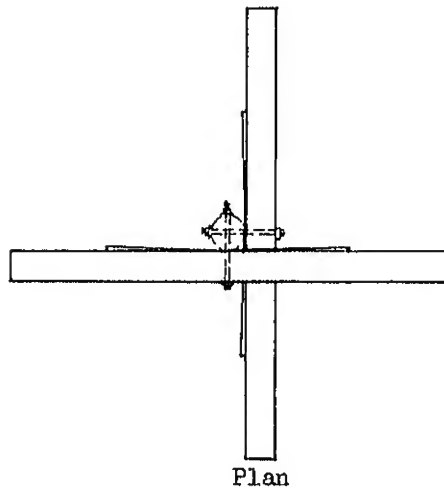
USED ON JOINT POLE IF DOUBLE ARMS ARE NECESSARY, ALSO ON JOINT LINES AT ALL RAILROAD AND RIVER CROSSINGS AND IS PERMISSIBLE ON NON-JOINT EXTENSIONS TO JOINT LINES; ALSO AT CORNERS AND FOR DOWNWARD GRADE CHANGES EXCEEDING TEN PERCENT. LIMITATIONS: CORNERS 35 TO 60 DEGREES; VERTICAL LOAD PER CONDUCTOR 225 TO 450 POUNDS, AND 25 PERCENT MAXIMUM DOWNWARD GRADE CHANGE.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
DOUBLE TEN-PIN CROSSARM (TYPE 10B)		
Scale: NTS		January 24, 1957
		PB5-4

Figure 29



WHERE ONE OF THE TWO SPANS HAS AN UP-PULL PLACE ITS CIRCUITS ON UPPER CROSSARM. IF ONE HAS A DOWNPULL PLACE ITS CIRCUITS ON LOWER ARM. IF BOTH SPANS PULL UP OR DOWN ADJUST SEPARATION OF CROSSARMS TO GIVE INCREASED SEPARATION BETWEEN THE WIRES IN THE TWO SPANS.



USED ON JOINT OR NON-JOINT CORNER POLES. LIMITATIONS: CORNERS 60 TO 90 DEGREES. MAXIMUM LONGITUDINAL PULL 650 LBS. PER CONDUCTOR. WHERE DEADENDING ONLY 4 TO 6 WIRES WITH THE REMAINING PIN POSITIONS NOT TO BE OCCUPIED ULTIMATELY, THE MAXIMUM LOAD PER WIRE MAY BE PROPORTIONALLY INCREASED. NOT TO BE USED ON LINES USING REA-1 TRANSPOSITION SYSTEM. SEE FIGURES 36, 37, AND 38 FOR THESE EXCEPTIONS. SEE GUIDE DRAWING 702 FOR NOTE ON CLIMBING SPACE.

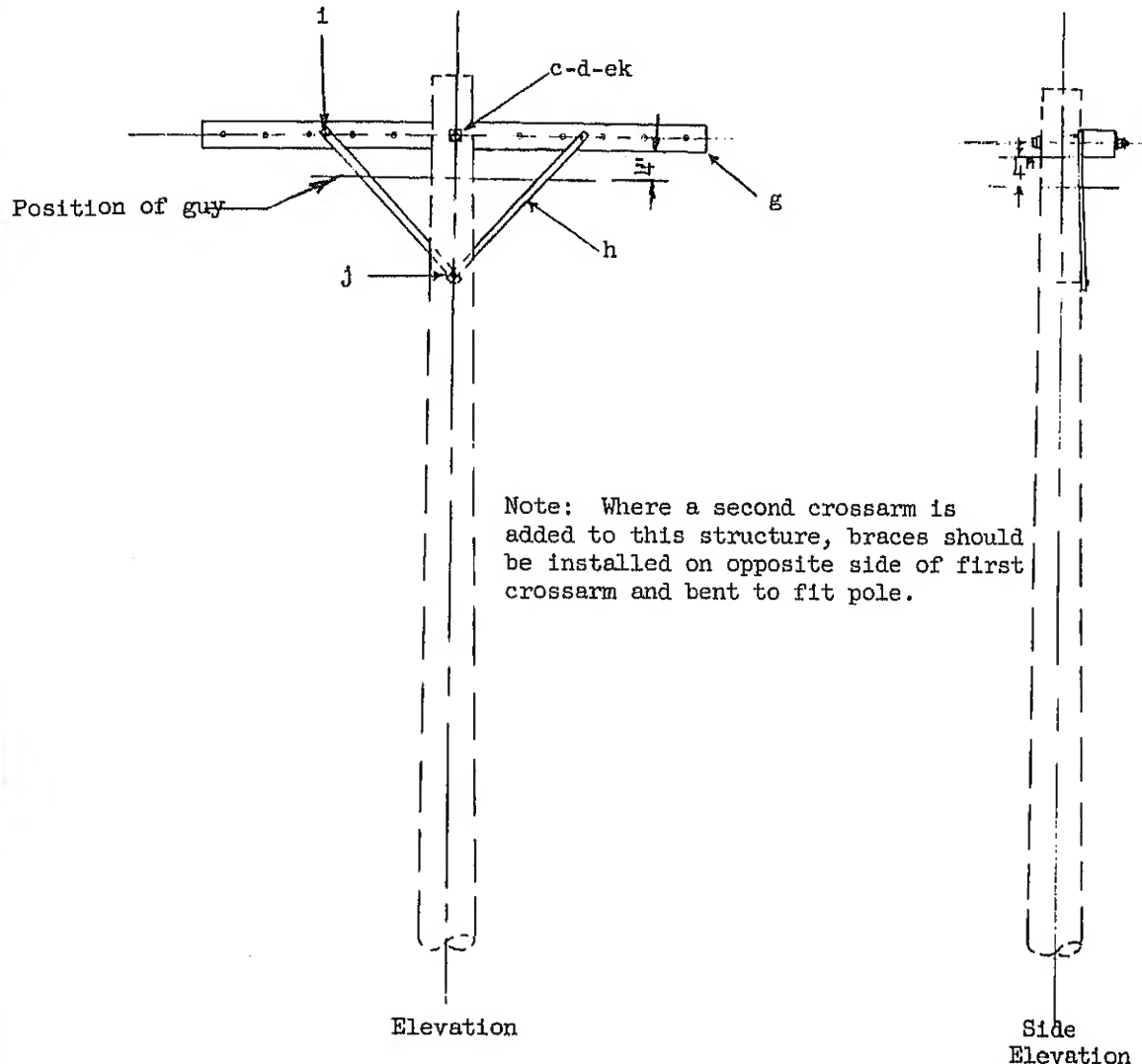
RURAL TELEPHONE CONSTRUCTION PRACTICES
DEADEND, TWO SINGLE CROSSARMS (TYPE DE)

Scale: NTS

November 13, 1958

PB5-5

Figure 30



USED ON JOINT OR NON-JOINT DEADEND POLES. LIMITATIONS: MAXIMUM LONGITUDINAL PULL PER CONDUCTOR 650 LBS. WHERE DEADENDING ONLY 4 OR 6 WIRES WITH THE REMAINING PIN POSITIONS NOT TO BE OCCUPIED ULTIMATELY, THE MAXIMUM LOAD MAY BE PROPORTIONATELY INCREASED; AND NOT TO BE USED IN LINES USING THE REA-1 TRANSPOSITION SYSTEM. SEE FIGURES 36, 37, AND 38 FOR THESE EXCEPTIONS.

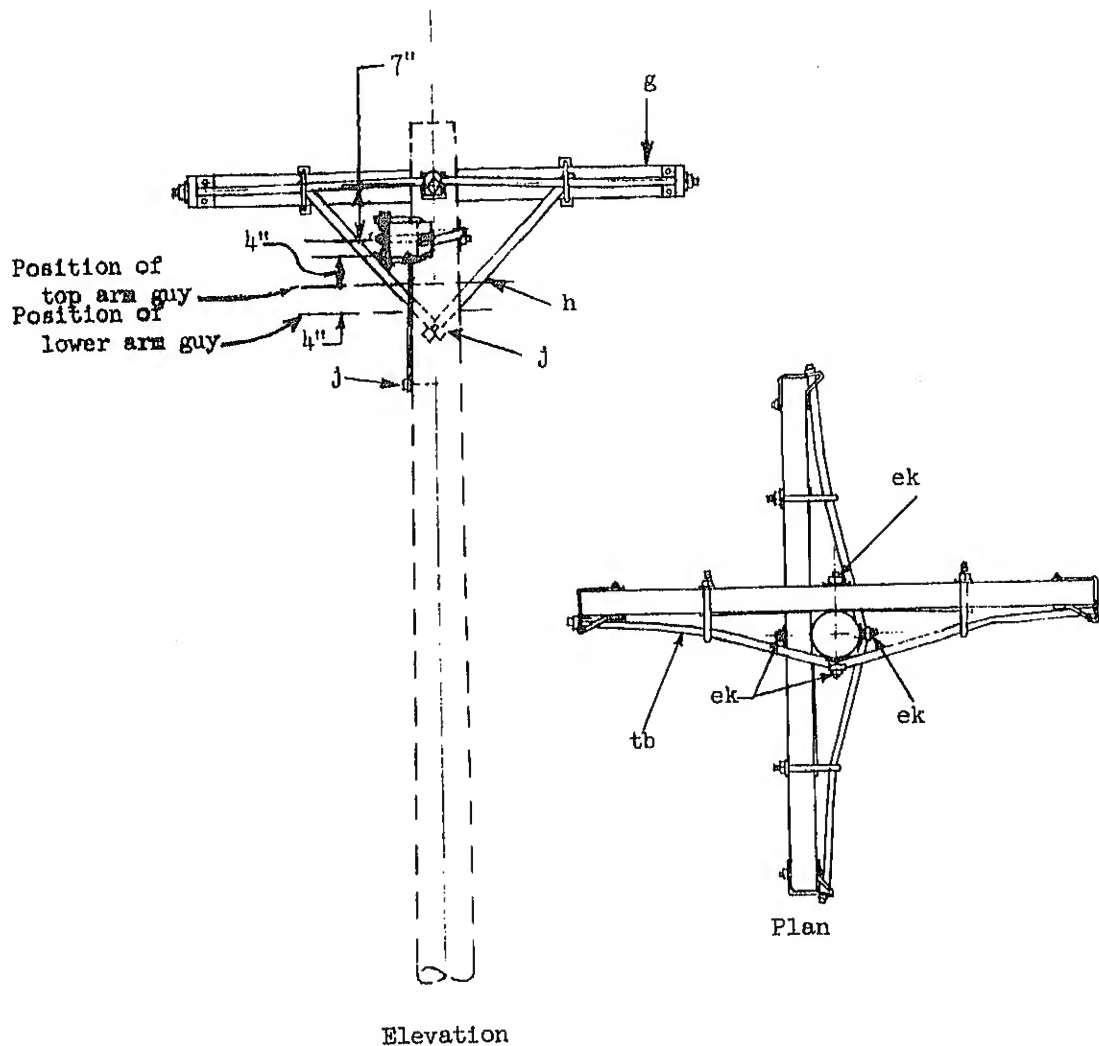
RURAL TELEPHONE CONSTRUCTION PRACTICES

DEADEND, SINGLE CROSSARM (TYPE DE)

Scale: NTS

December 2, 1954
PB5-6

Figure 31



Note: All hardware items not listed in materials list are supplied with back truss.

USED ON JOINT OR NON-JOINT CORNER POLES. LIMITATIONS: CORNERS 60 TO 90 DEGREES: MAXIMUM LONGITUDINAL PULL 1500 LBS. PER CONDUCTOR; AND NOT TO BE USED IN LINES USING THE REA-1 TRANSPOSITION SYSTEM. SEE FIGURES 36, 37, and 38 FOR THESE EXCEPTIONS. SEE GUIDE DRAWING 702 FOR NOTE ON CLIMBING SPACE.

RURAL TELEPHONE CONSTRUCTION PRACTICES
DEADEND, TWO SINGLE CROSSARMS (TYPE DET)

Scale: NTS

Sept. 26, 1958

PB5-7

Figure 32

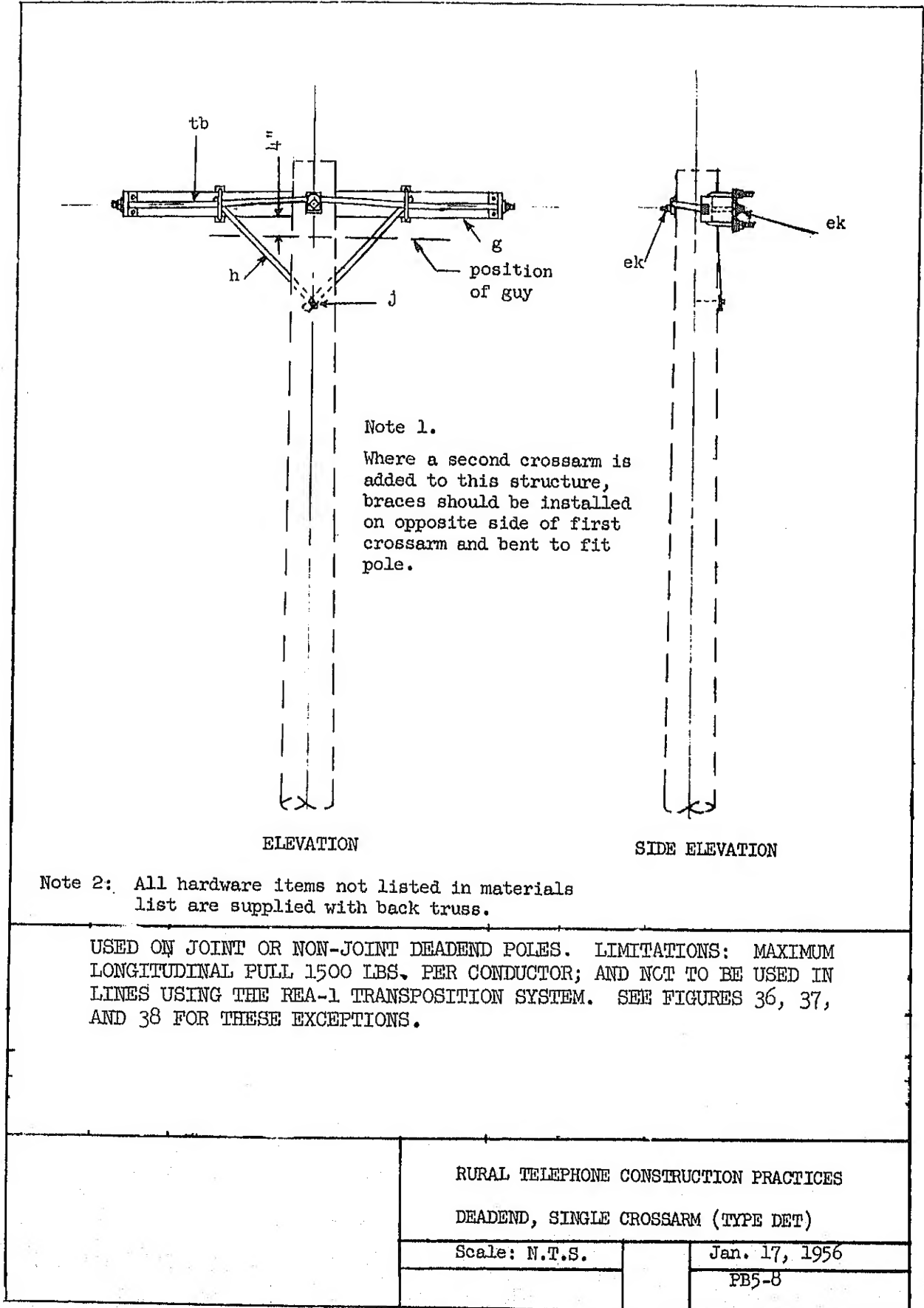
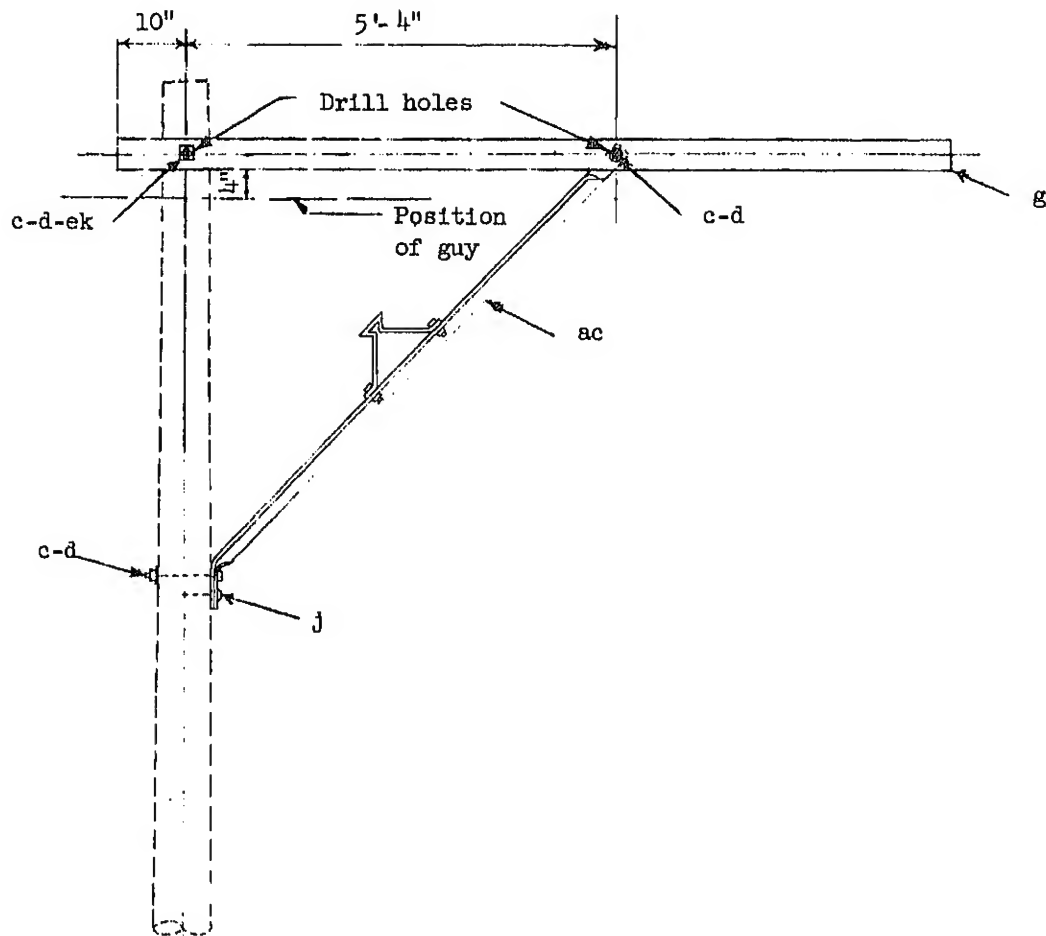


Figure 33



USED ON NON-JOINT POLES TO AVOID TREES OR OTHER OBSTRUCTIONS.
 LIMITATIONS: MAXIMUM CORNER 5 DEGREES WITHOUT GUY; 225 LBS. MAXIMUM CORNER 5 DEGREES WITHOUT GUY; 225 LBS. MAXIMUM VERTICAL LOAD PER CONDUCTOR; 10 PERCENT MAXIMUM DOWNWARD GRADE CHANGE. REQUIRES POLE ONE CLASS LARGER THAN OTHERS IN NON-JOINT LINES.

RURAL TELEPHONE CONSTRUCTION PRACTICES

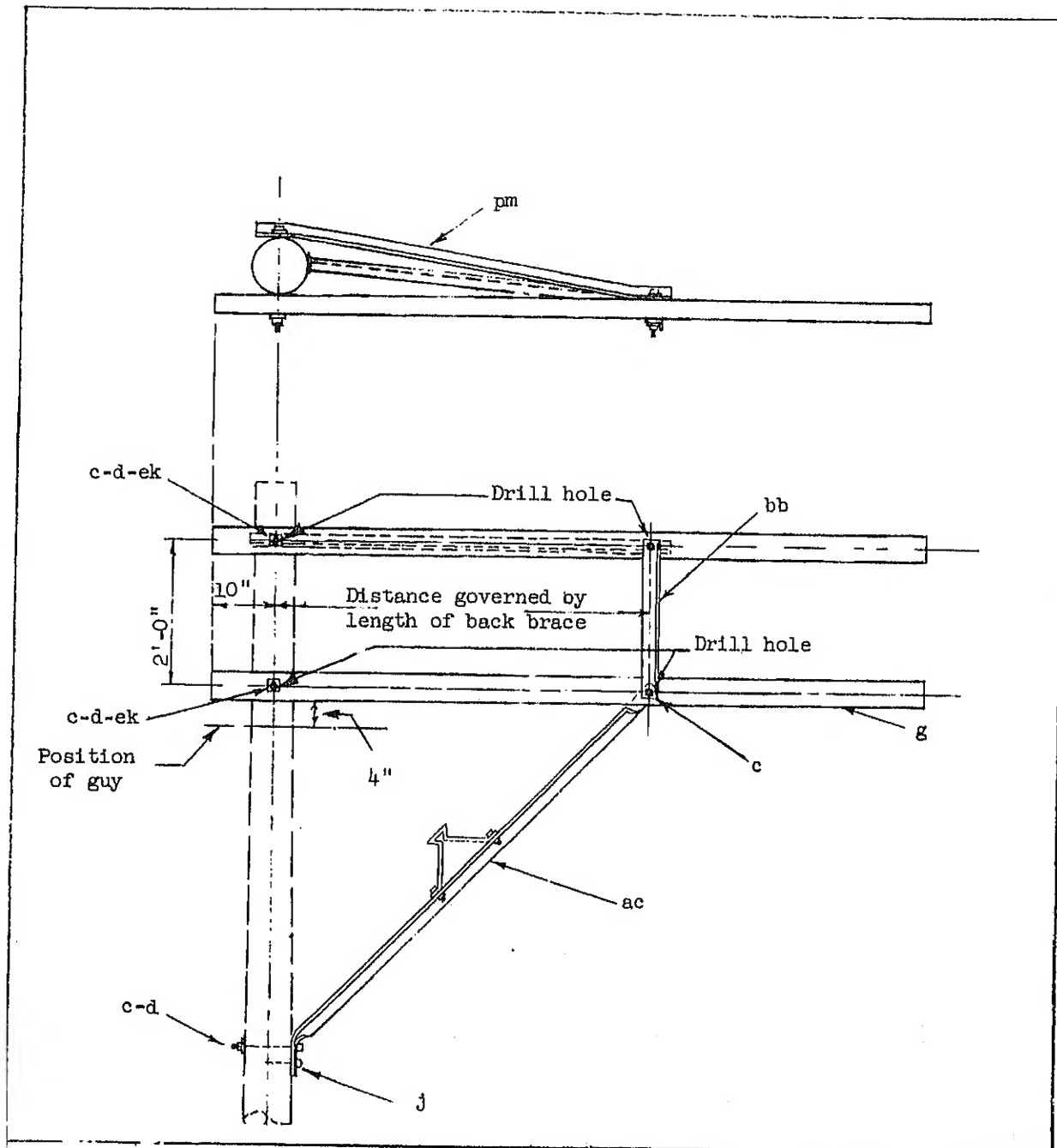
SINGLE 10-PIN SIDEARM (TYPE 10A)

Scale: NTS

December 30, 1955

PB5-9

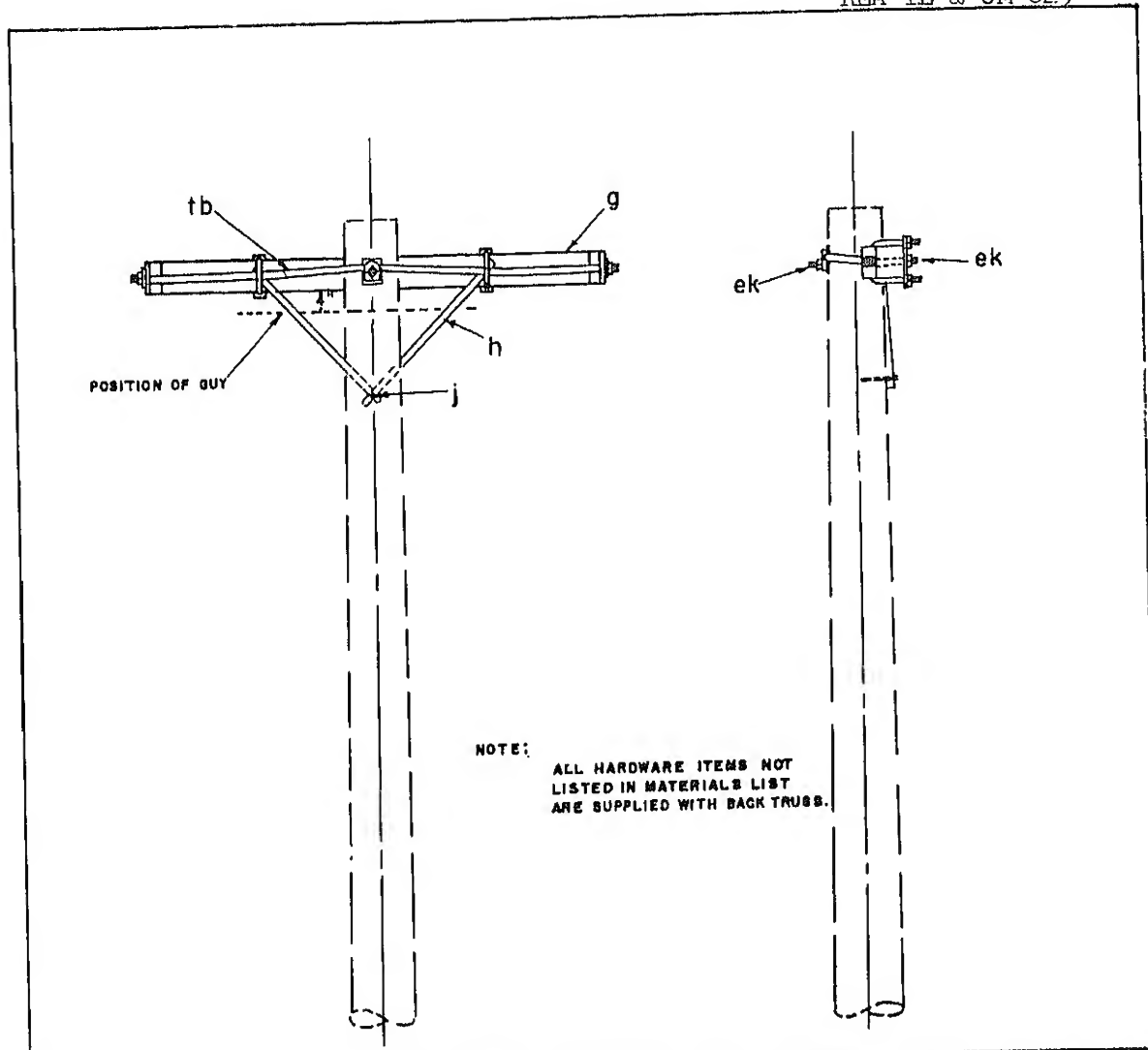
Figure 34



USED ON TWO CROSSARM NON-JOINT POLES TO AVOID TREES OR OTHER OBSTRUCTIONS. LIMITATIONS: MAXIMUM CORNER FIVE DEGREES WITHOUT GUY; 225 POUNDS MAXIMUM VERTICAL LOAD PER CONDUCTOR; TEN PERCENT MAXIMUM DOWNWARD GRADE CHANGE. REQUIRES POLE ONE CLASS LARGER THAN OTHERS IN NON-JOINT LINES.

RURAL TELEPHONE CONSTRUCTION PRACTICES		
TWO SINGLE 10-PIN SIDEARMS (TYPE 10A)		
Scale: NTS		January 18, 1956
		PR5-10

Figure 35



USED AS DEADENDS IN JOINT OR NON-JOINT CONSTRUCTION TRANSPOSED ACCORDING TO REA TE & CM-643, "REA-1 TRANSPOSITION SYSTEM."

PB5-11 USED AS SHOWN IN FIGURE 2, REA TE & CM-643, DETA CROSSARMS.

PB5-12 USED AS SHOWN IN FIGURE 4, REA TE & CM-643, DETB CROSSARMS.

PB5-14 HAS NO APPLICATION AT PRESENT. DETD CROSSARMS.

RURAL TELEPHONE CONSTRUCTION PRACTICES DEADENDS, SINGLE CROSSARM (TYPES DETA, DETB, DETD)		
Scale: NTS		August 23, 1960
		PB5-11, -12, -14

Figure 36

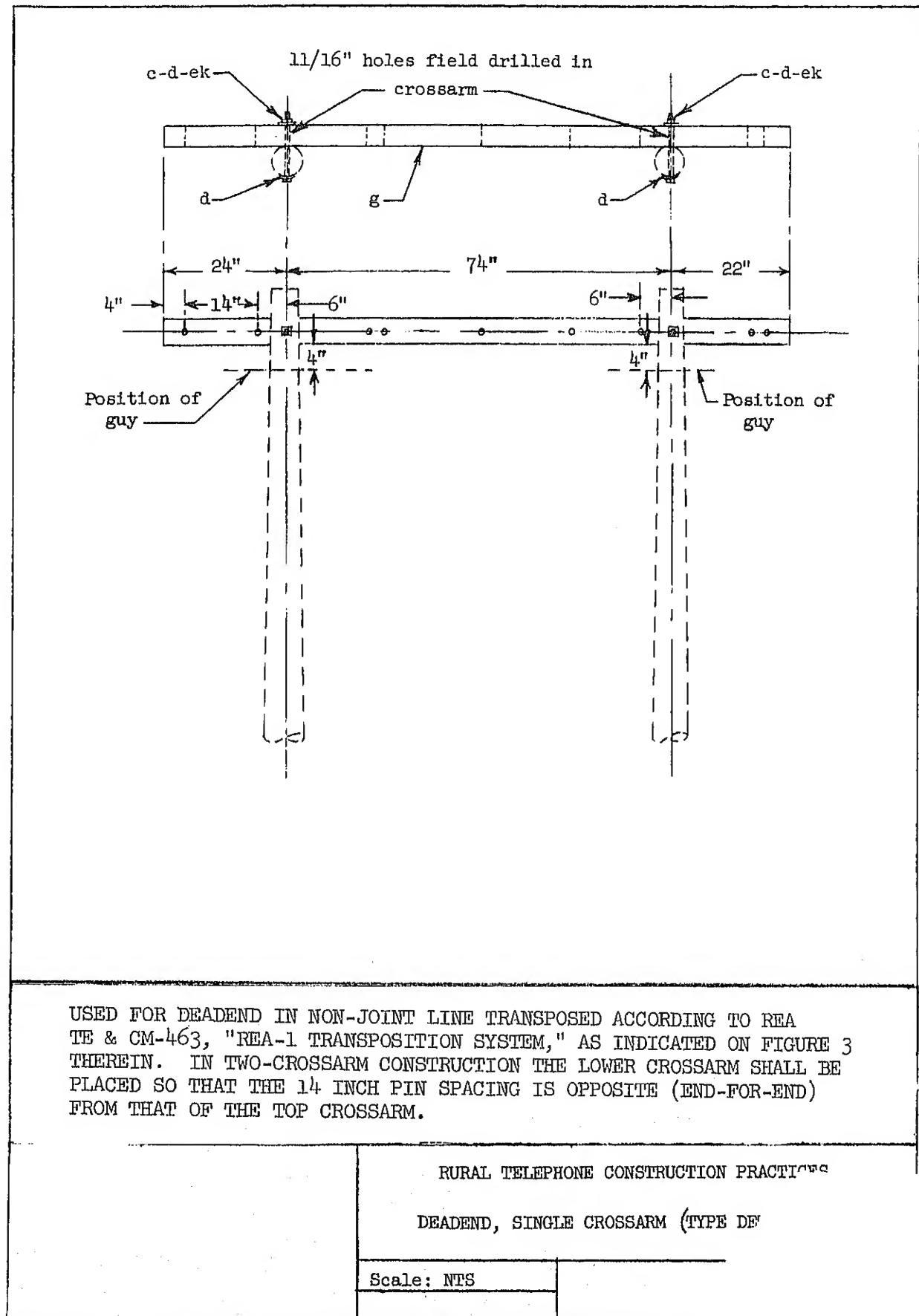
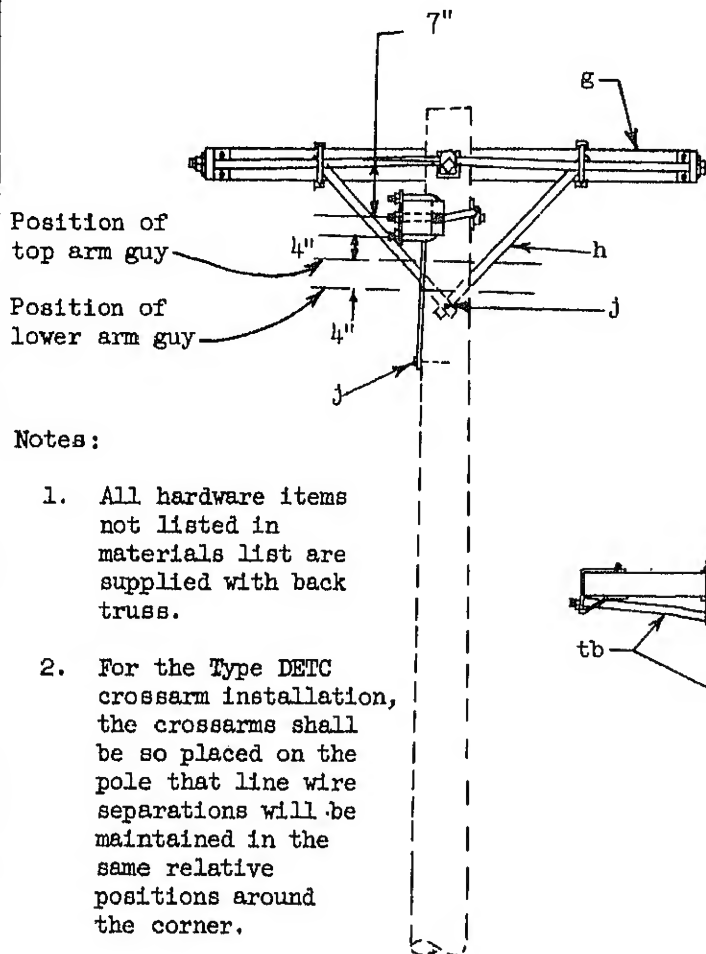


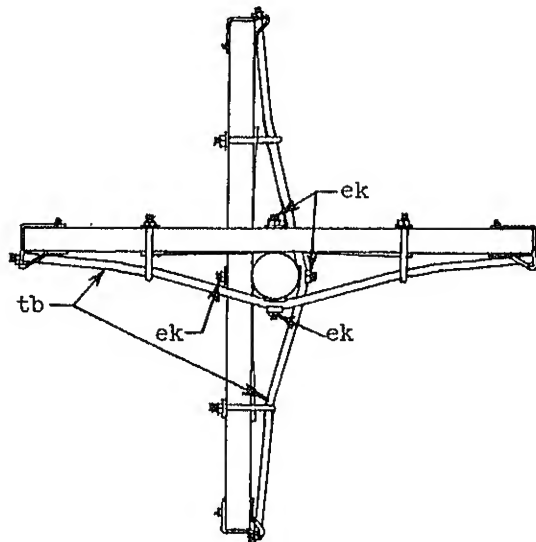
Figure 37



WHERE ONE OF THE TWO SPANS HAS AN UP-PULL PLACE ITS CIRCUITS ON UPPER CROSSARM. IF ONE HAS A DOWN-PULL PLACE ITS CIRCUITS ON LOWER ARM. IF BOTH SPANS PULL UP OR DOWN ADJUST SEPARATION OF CROSSARMS TO GIVE INCREASED SEPARATION BETWEEN THE WIRES IN THE TWO SPANS.

Notes:

1. All hardware items not listed in materials list are supplied with back truss.
2. For the Type DETC crossarm installation, the crossarms shall be so placed on the pole that line wire separations will be maintained in the same relative positions around the corner.



USED AS DEADENDS IN JOINT OR NON-JOINT CONSTRUCTION TRANSPOSED ACCORDING TO REA TE & CM-463, "REA-1 TRANSPOSITION SYSTEM."

- PB5-16 USED AS SHOWN ON FIGURE 2, REA TE & CM-643. DETA CROSSARMS.
- PB5-17 USED AS SHOWN ON FIGURE 4, REA TE & CM-643. DETB CROSSARMS.
- PB5-18 USED AS SHOWN ON FIGURE 3, REA TE & CM-643. DETC CROSSARMS. THIS UNIT CAN BE USED FOR EITHER TOP OR LOWER CROSSARM.
- PB5-19 HAS NO APPLICATION AT PRESENT. DETD CROSSARMS.
- REFER TO GUIDE DRAWING 702 FOR CLIMBING SPACE.

RURAL TELEPHONE CONSTRUCTION PRACTICES
DEADEND, TWO SINGLE CROSSARMS
(TYPES DETA, DETB, DETC, DETD)

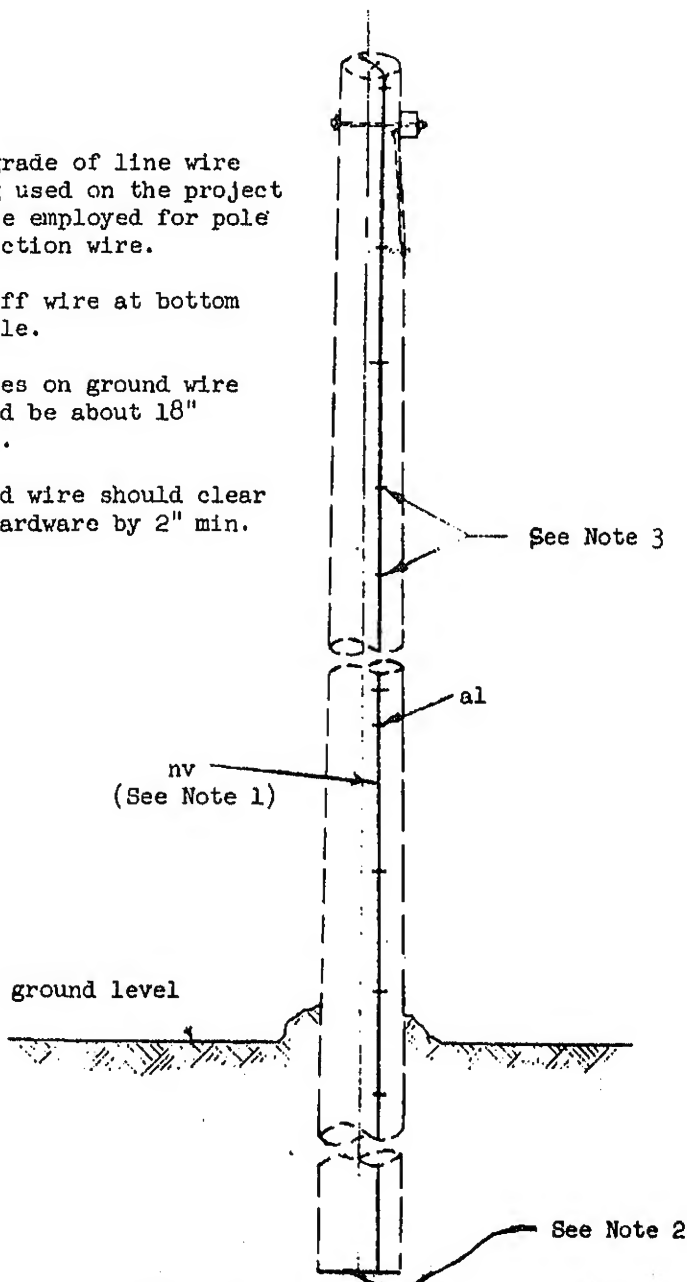
Scale: NTS

August 23, 1960

PB5-16, -17, -18, -19

Figure 38

- Notes:
1. Any grade of line wire being used on the project may be employed for pole protection wire.
 2. Cut off wire at bottom of pole.
 3. Staples on ground wire should be about 18" apart.
 4. Ground wire should clear all hardware by 2" min.



USED TO PREVENT SPLITTING OF WOOD POLES BY LIGHTNING IN AREAS OF HIGH LIGHTNING INCIDENCE. SEE REA TE & CM-820, "OPEN WIRE CIRCUIT PROTECTION," FOR APPLICATION.

RURAL TELEPHONE CONSTRUCTION PRACTICES

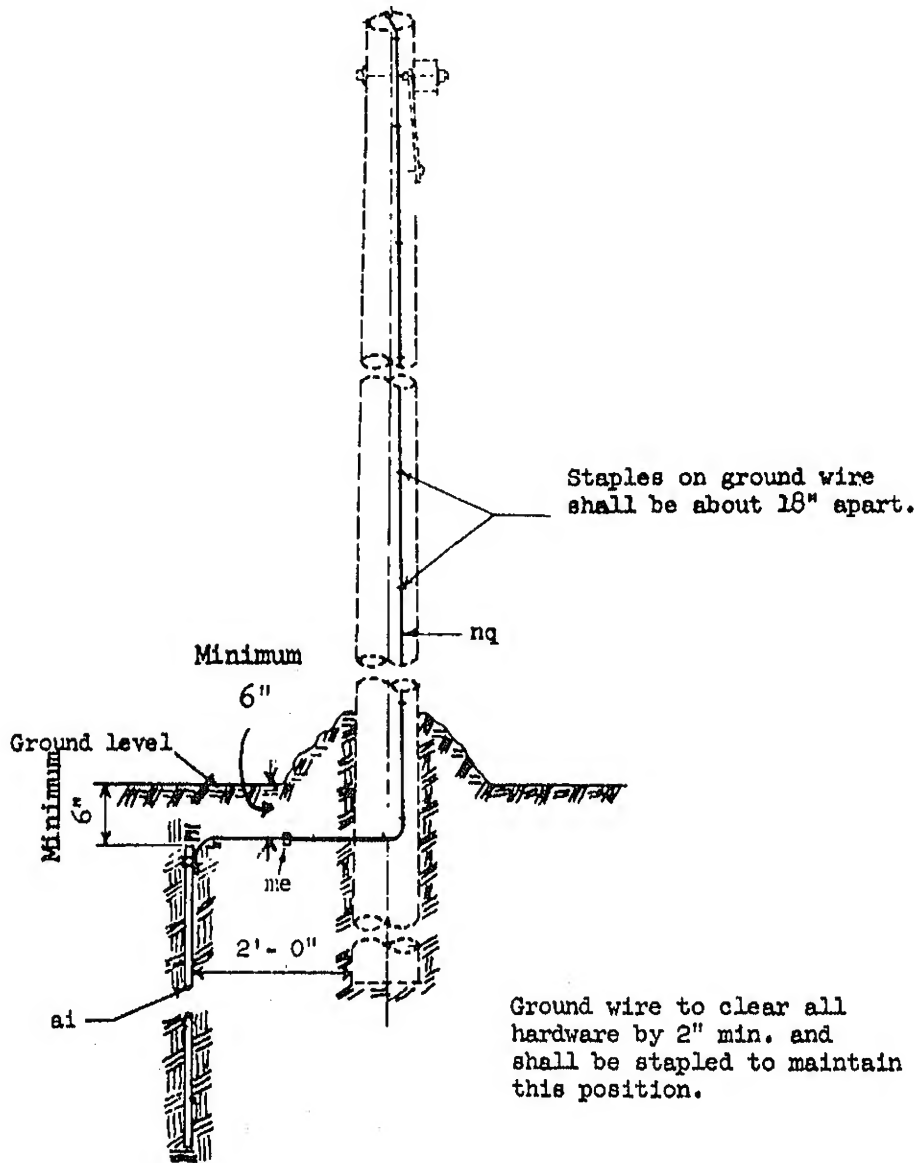
POLE LIGHTNING PROTECTION ASSEMBLY

Scale: NTS

September 22, 1958

PM1

Figure 39



USED PRIMARILY ON NON-JOINT POLES TO PROVIDE A GROUND FOR POLE OR CROSSARM-MOUNTED LIGHTNING ARRESTERS AND FOR DRAINAGE UNITS. FOR APPLICATIONS SEE REA TE & CM-830, "SUMMARY OF UNITS FOR ELECTRICAL PROTECTION."

RURAL TELEPHONE CONSTRUCTION PRACTICES

POLE GROUND ASSEMBLY

Scale: N.T.S.

July 20, 1960

PM2

Figure 40

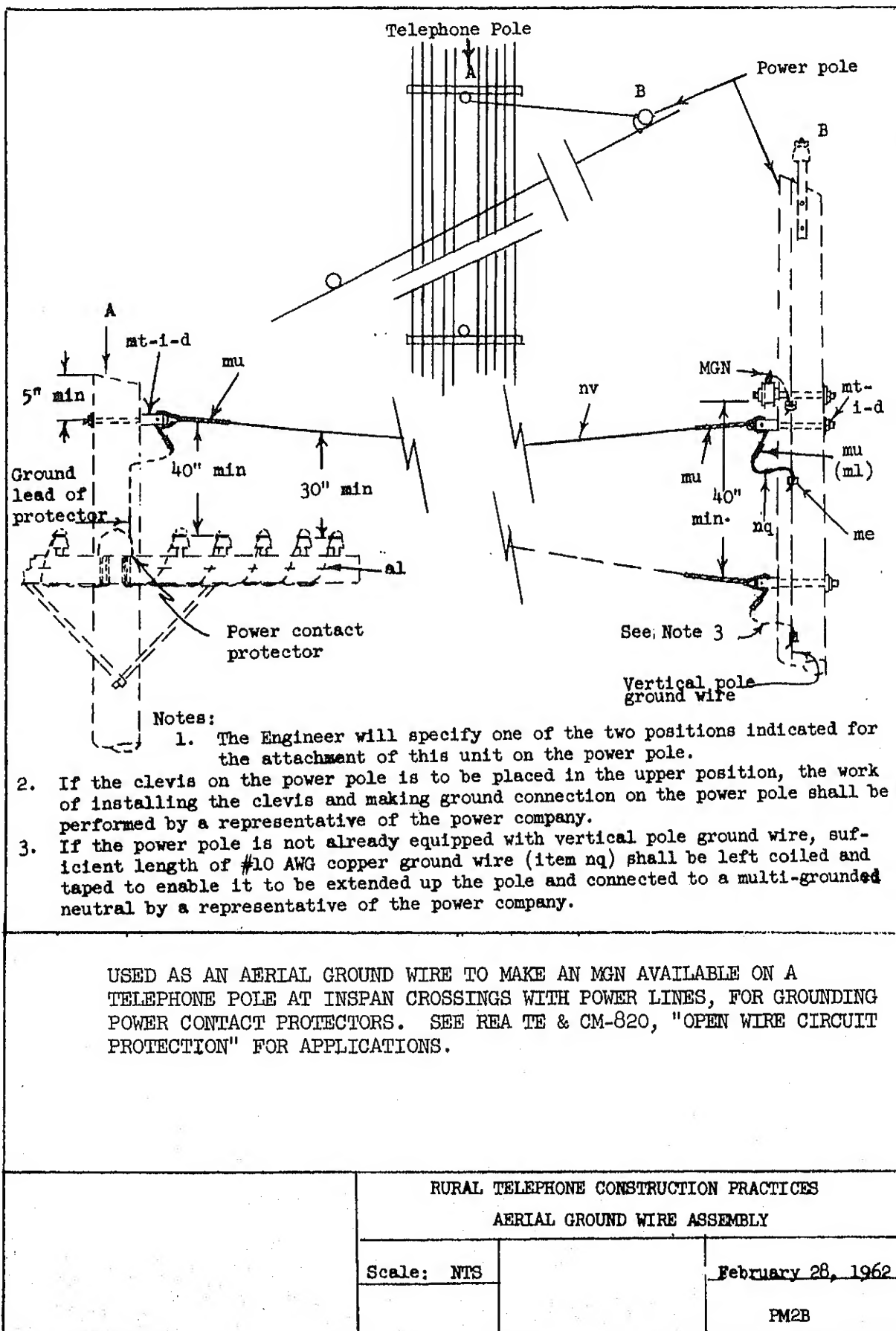
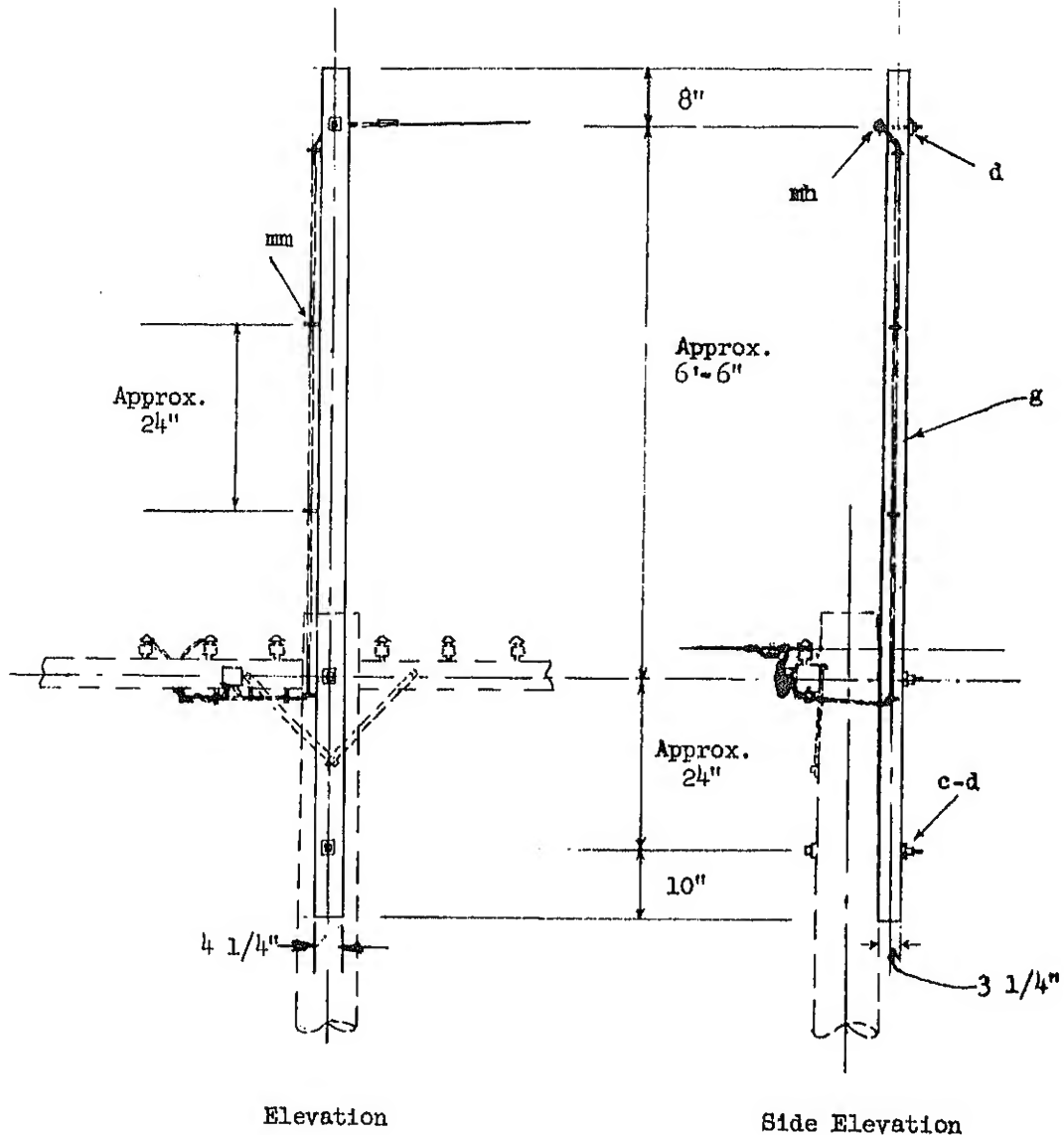


Figure 41



USED ONLY ON EXISTING POLES WHERE NECESSARY TO OBTAIN GROUND CLEARANCE FOR DROP WIRES ACROSS A HIGHWAY. THE CROSSARM MUST BE BORED ON THE JOB FOR THE POLE MOUNTING HOLES. TYPE 10A OR 10B CROSSARMS CAN BE USED FOR THIS UNIT. IN A NEW LINE THE POLE SELECTED SHOULD HAVE PROPER HEIGHT TO PROVIDE REQUIRED DROP WIRE GROUND CLEARANCE TO AVOID USE OF THIS UNIT.

RURAL TELEPHONE CONSTRUCTION PRACTICES

POLE TOP EXTENSION

Scale: NTS		January 26, 1950
		PM3

Figure 42

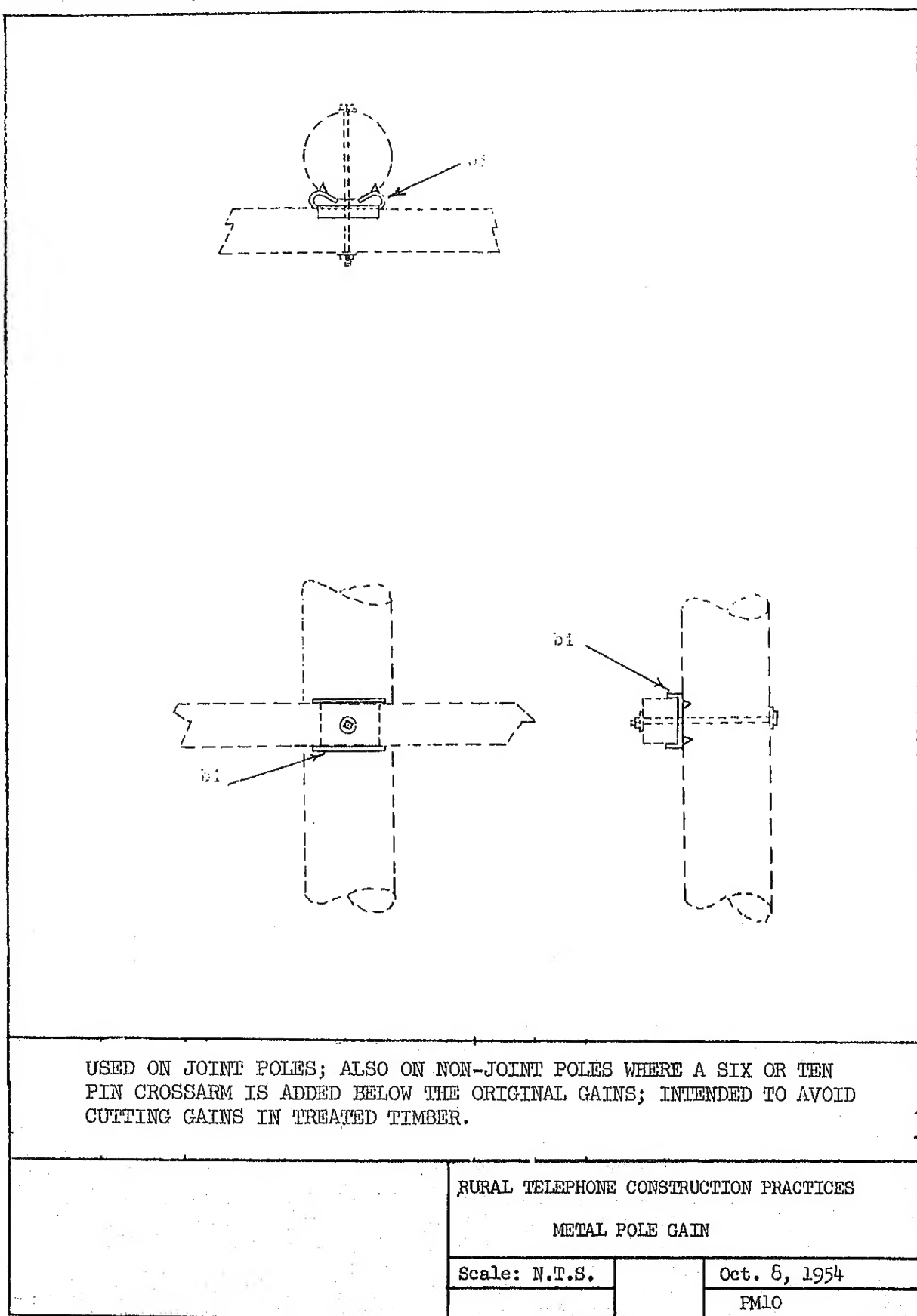


Figure 43

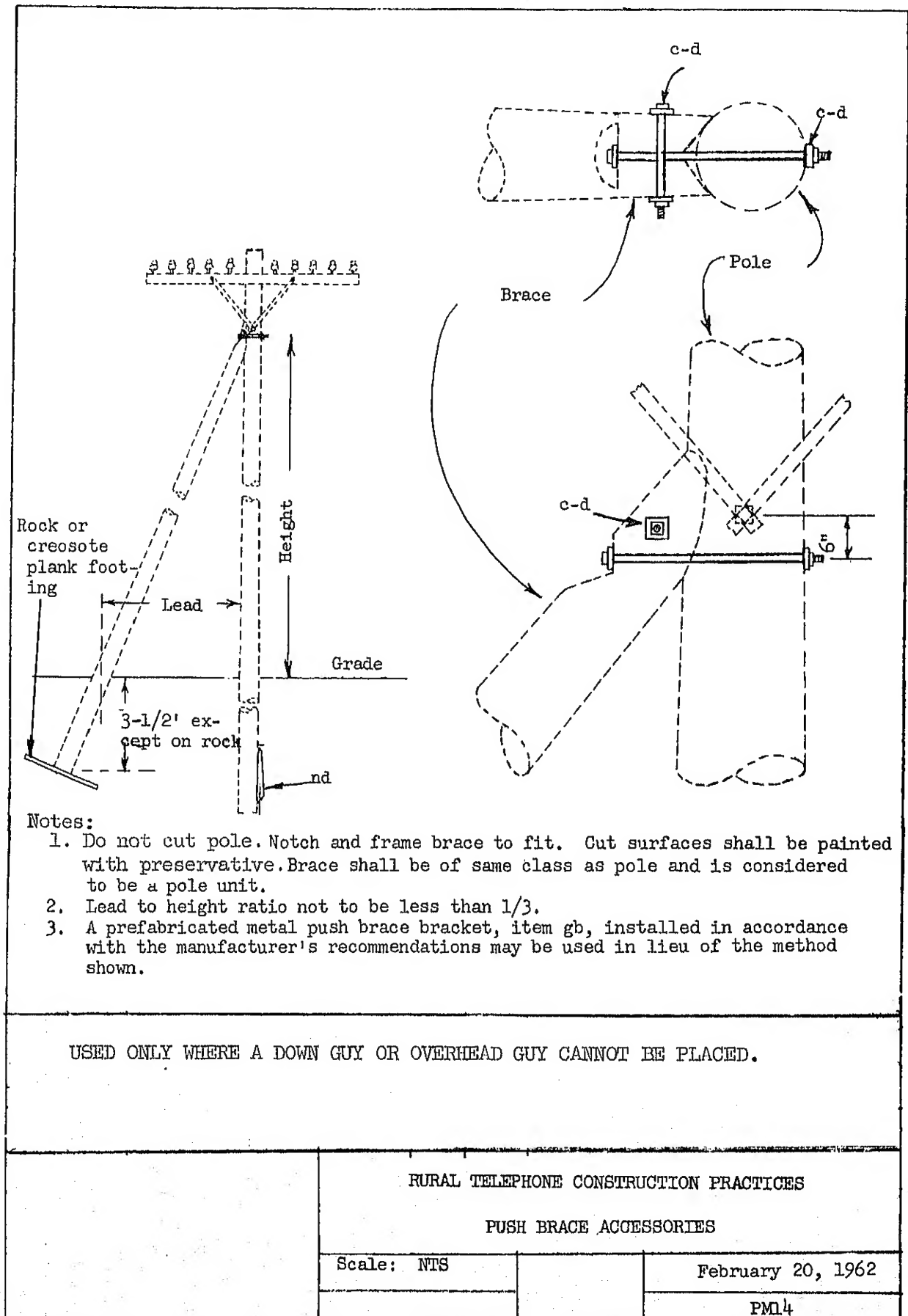
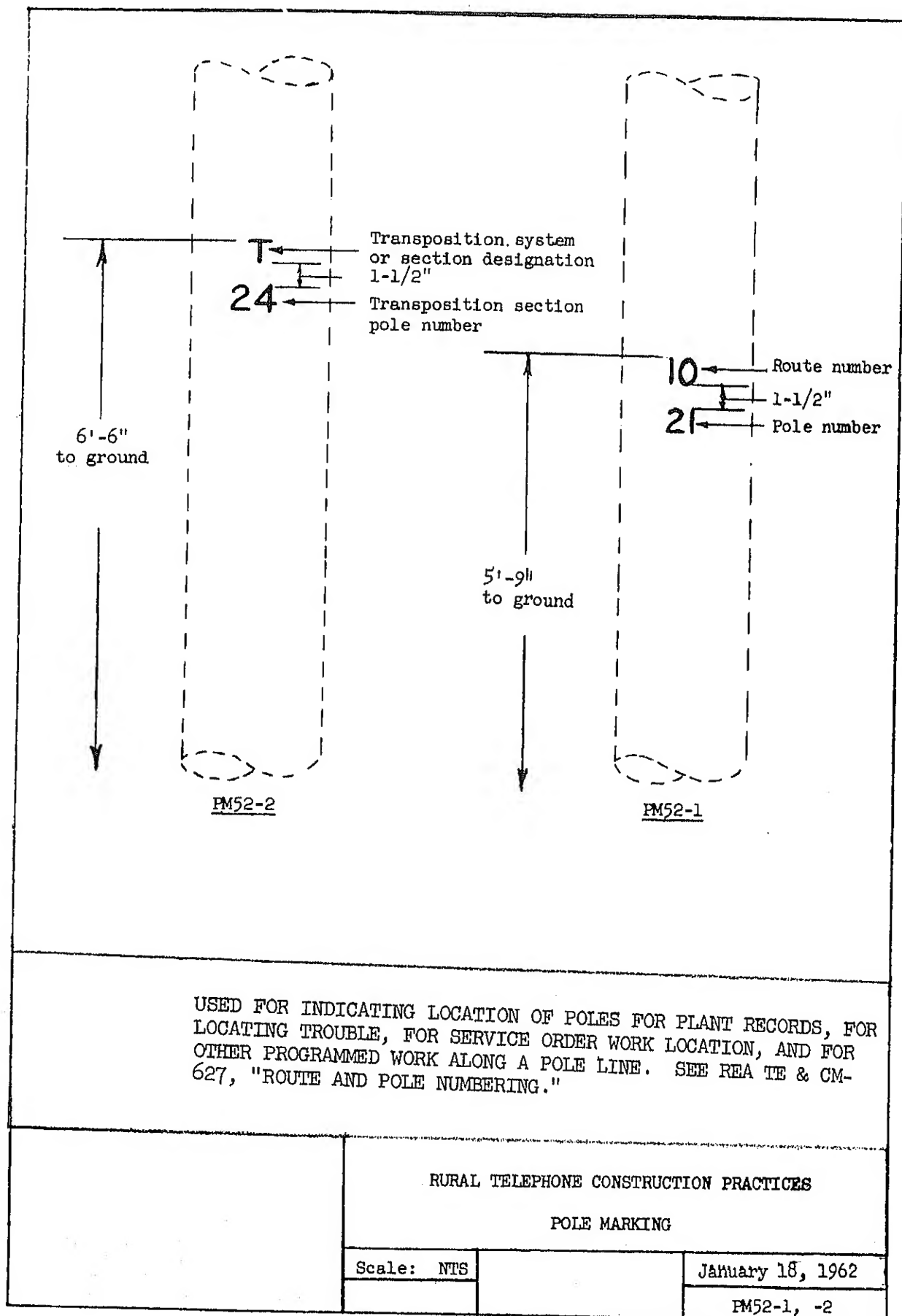
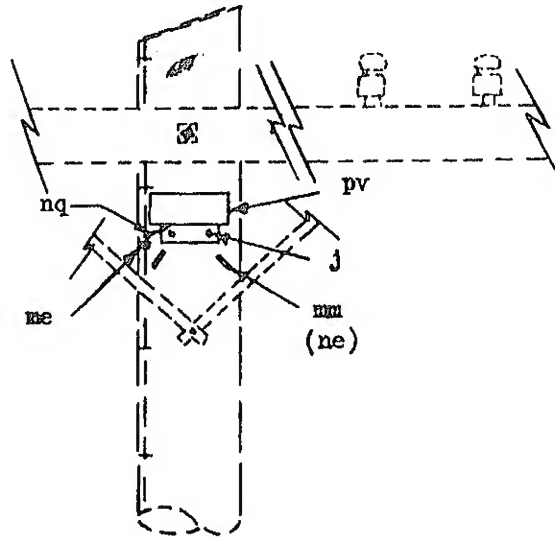
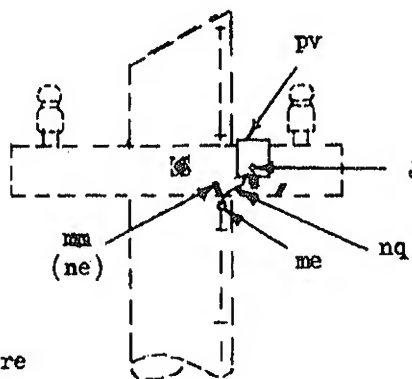


Figure 44





P3-5



P3-1

Note: These units include bridling from open wire to lightning arresters.

USED ON OPEN WIRE TELEPHONE CIRCUITS AS "BUFFER" PROTECTION FOR CONNECTED CABLE WHERE POWER CONTACT PROTECTORS ARE NOT USED ON SUCH LINES. USUAL LOCATION IS 1500 FEET FROM CABLE END. SEE REA TE & CM-815, "CABLE CIRCUIT PROTECTION," AND REA TE & CM-820, "OPEN WIRE CIRCUIT PROTECTION."

RURAL TELEPHONE CONSTRUCTION PRACTICES
LIGHTNING ARRESTERS (SINGLE PAIR AND FIVE PAIRS)

Scale: NTS

March 1, 1962

P3-1, -5

Figure 46

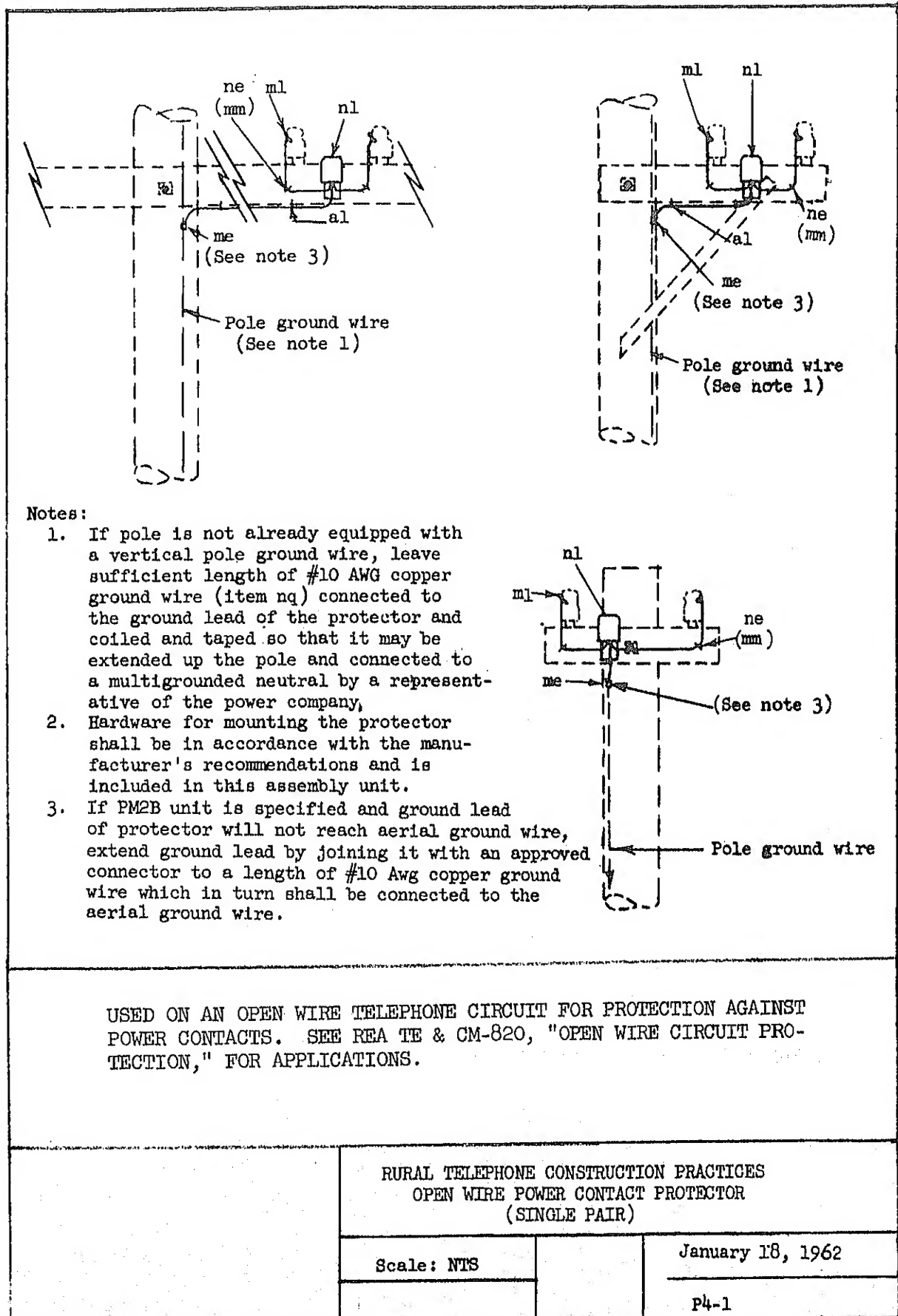
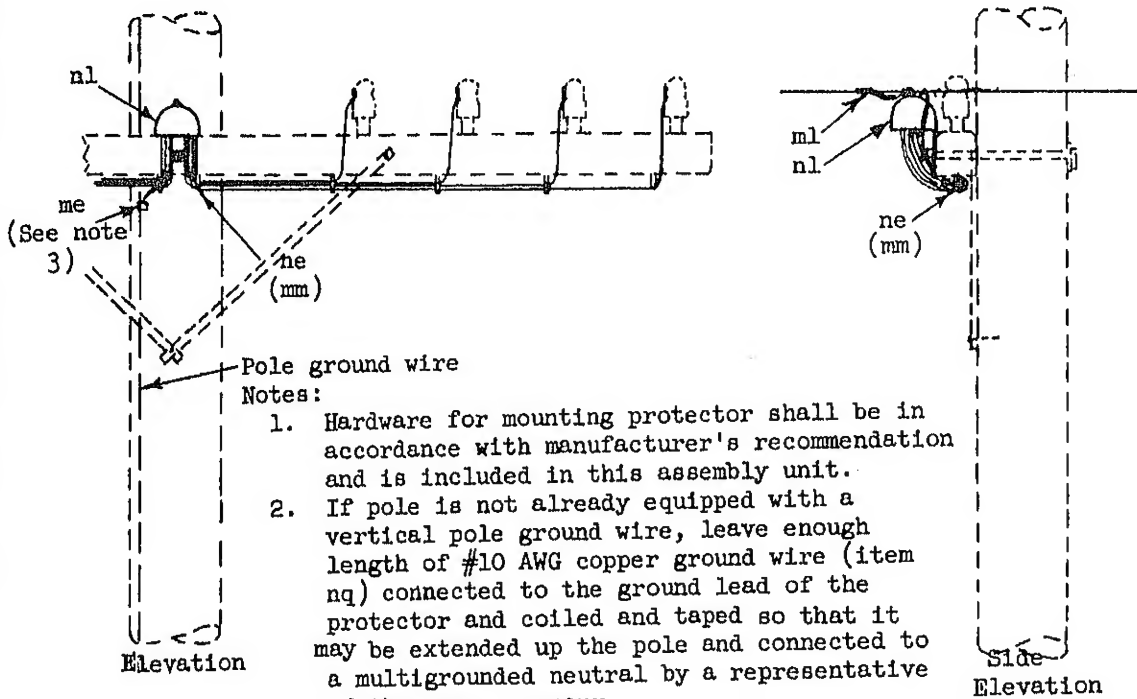


Figure 47



Notes:

1. Hardware for mounting protector shall be in accordance with manufacturer's recommendation and is included in this assembly unit.
2. If pole is not already equipped with a vertical pole ground wire, leave enough length of #10 AWG copper ground wire (item nq) connected to the ground lead of the protector and coiled and taped so that it may be extended up the pole and connected to a multigrounded neutral by a representative of the power company.
3. If FM2B unit is specified and ground lead of protector will not reach aerial ground wire, extend ground lead by joining it with an approved connector to a length of #10 AWG ground wire which in turn shall be connected to the aerial ground wire.

USED ON OPEN WIRE TELEPHONE CIRCUITS FOR PROTECTION AGAINST POWER CONTACTS. SEE REA TE & CM-820, "OPEN WIRE CIRCUIT PROTECTION," FOR APPLICATIONS.

RURAL TELEPHONE CONSTRUCTION PRACTICES
OPEN WIRE POWER CONTACT PROTECTOR
(FIVE PAIRS)

Scale: NTS

January 18, 1962

P 4-5

Figure 48

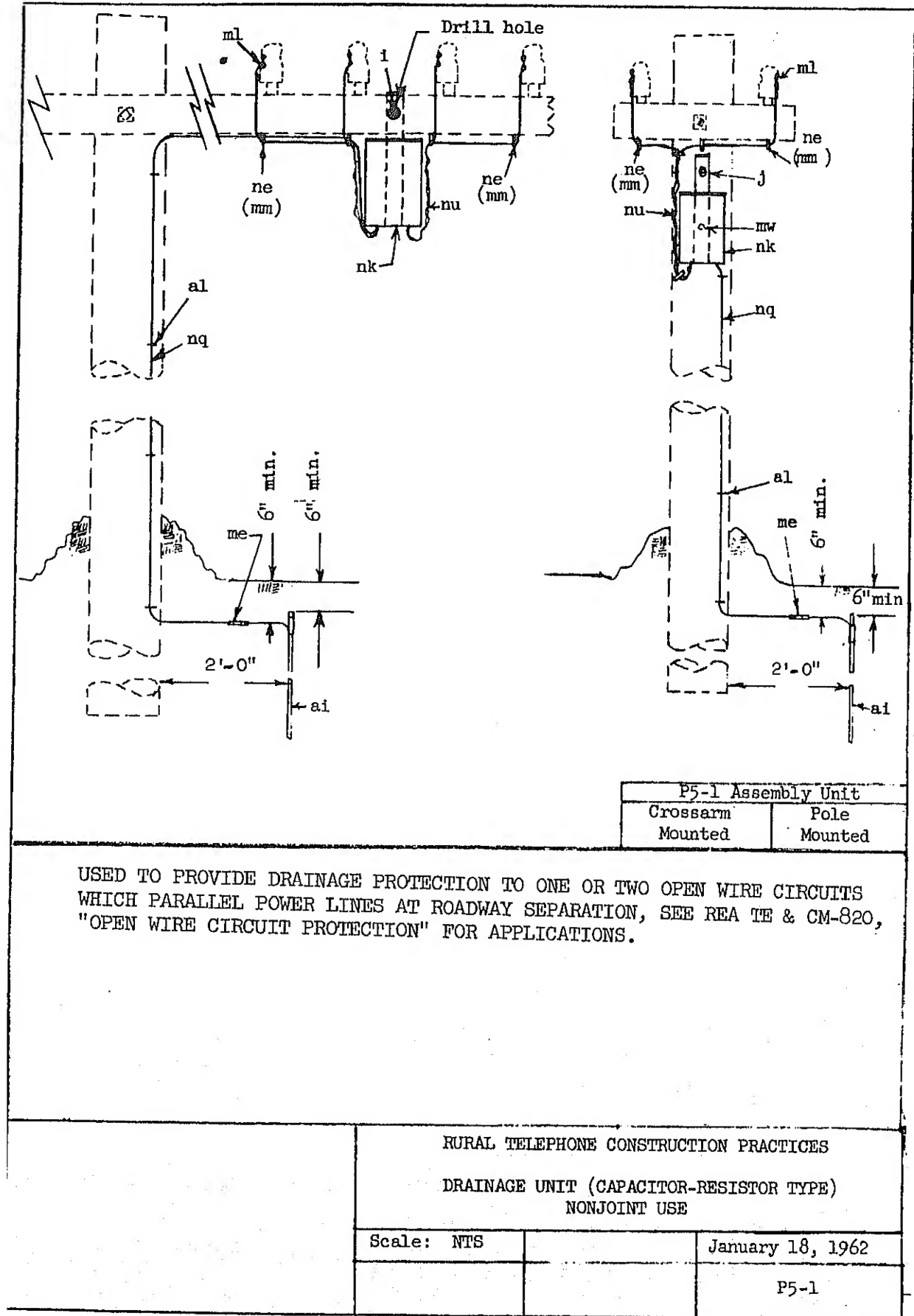
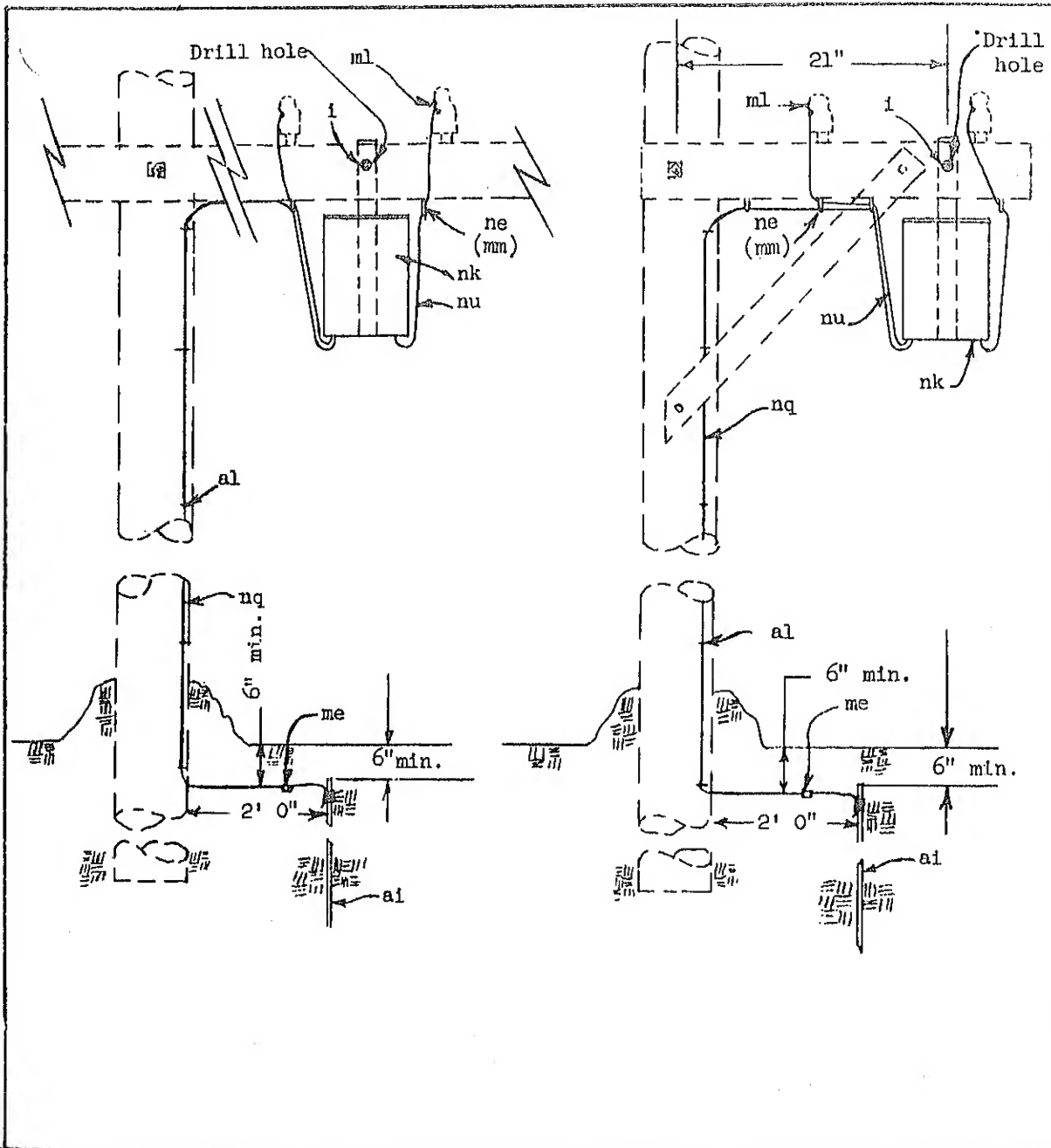


Figure 49



USED TO PROVIDE DRAINAGE PROTECTION ON ONE JOINT USE OPEN WIRE.
CIRCUIT ON POLES CARRYING OTHER THAN MGN TYPE POWER CIRCUITS.
SEE REA TE & CM-820, "OPEN WIRE CIRCUIT PROTECTION," FOR
APPLICATIONS.

RURAL TELEPHONE CONSTRUCTION PRACTICES

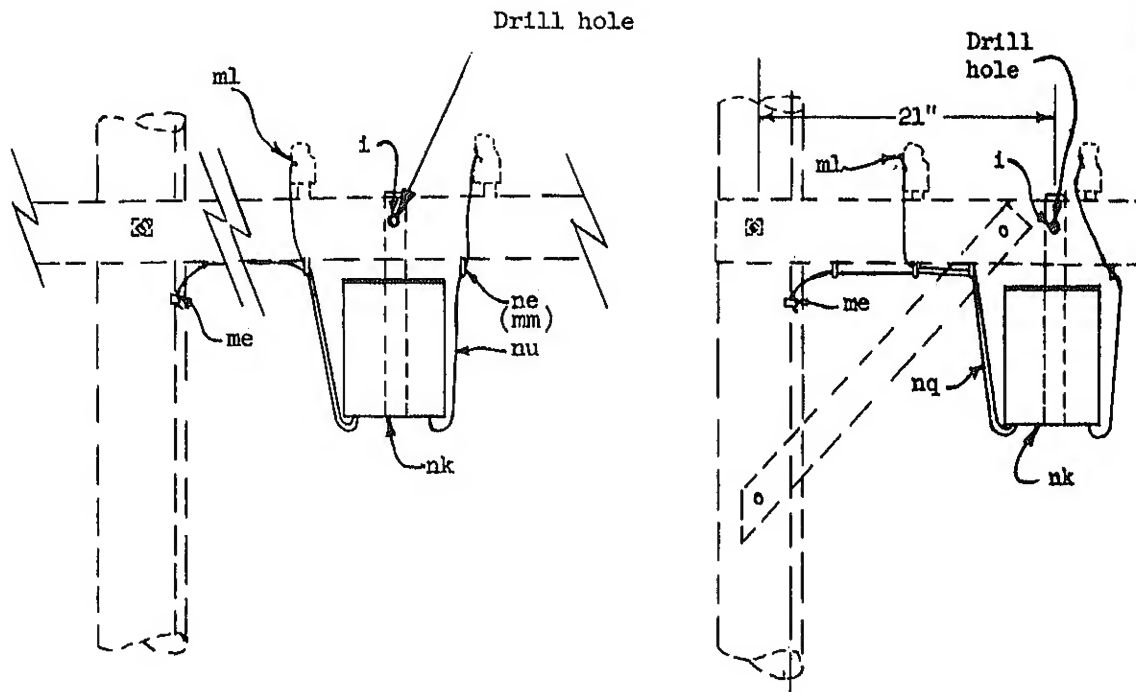
DRAINAGE UNIT (INDUCTOR-CAPACITOR TYPE)
JOINT USE (CONNECTION TO GROUND ROD)

Scale: NTS

January 18, 1962

P6-1A

Figure 50



Note: If pole is not already equipped with a vertical pole ground wire, leave enough length of #10 AWG copper ground wire (item "nq") coiled and taped so that it may be extended up the pole and connected to a multigrounded neutral by a representative of the power company.

USED TO PROVIDE DRAINAGE PROTECTION ON ONE JOINT USE OPEN WIRE CIRCUIT ON POLES CARRYING MGN TYPE POWER CIRCUITS. SEE REA TE & CM-820, "OPEN WIRE CIRCUIT PROTECTION," FOR APPLICATIONS.

RURAL TELEPHONE CONSTRUCTION PRACTICES
DRAINAGE UNIT (INDUCTOR-CAPACITOR TYPE)
JOINT USE (CONNECTION TO MGN)

Scale: NTS

January 18, 1962

P6-1C

Figure 51

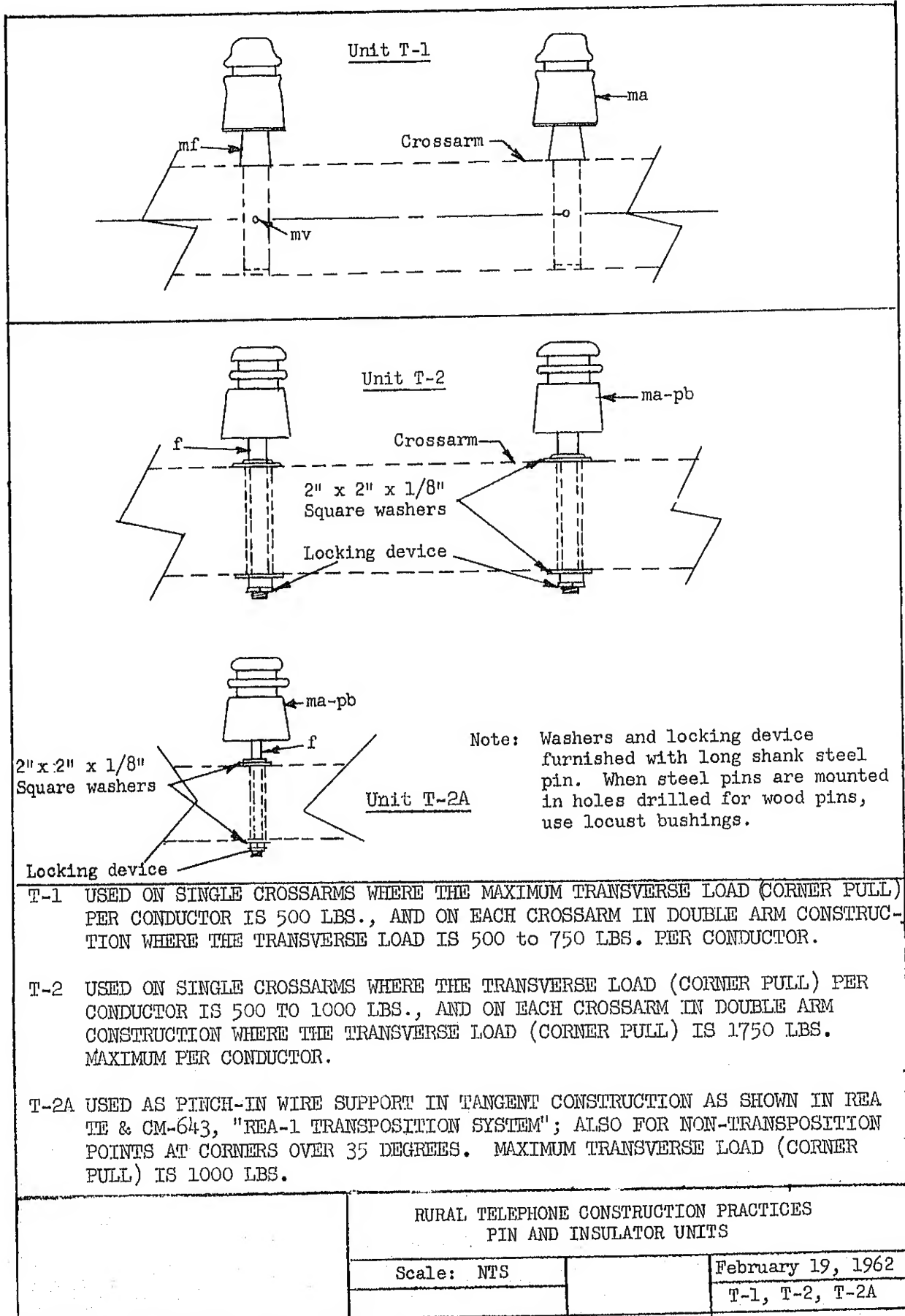


Figure 52

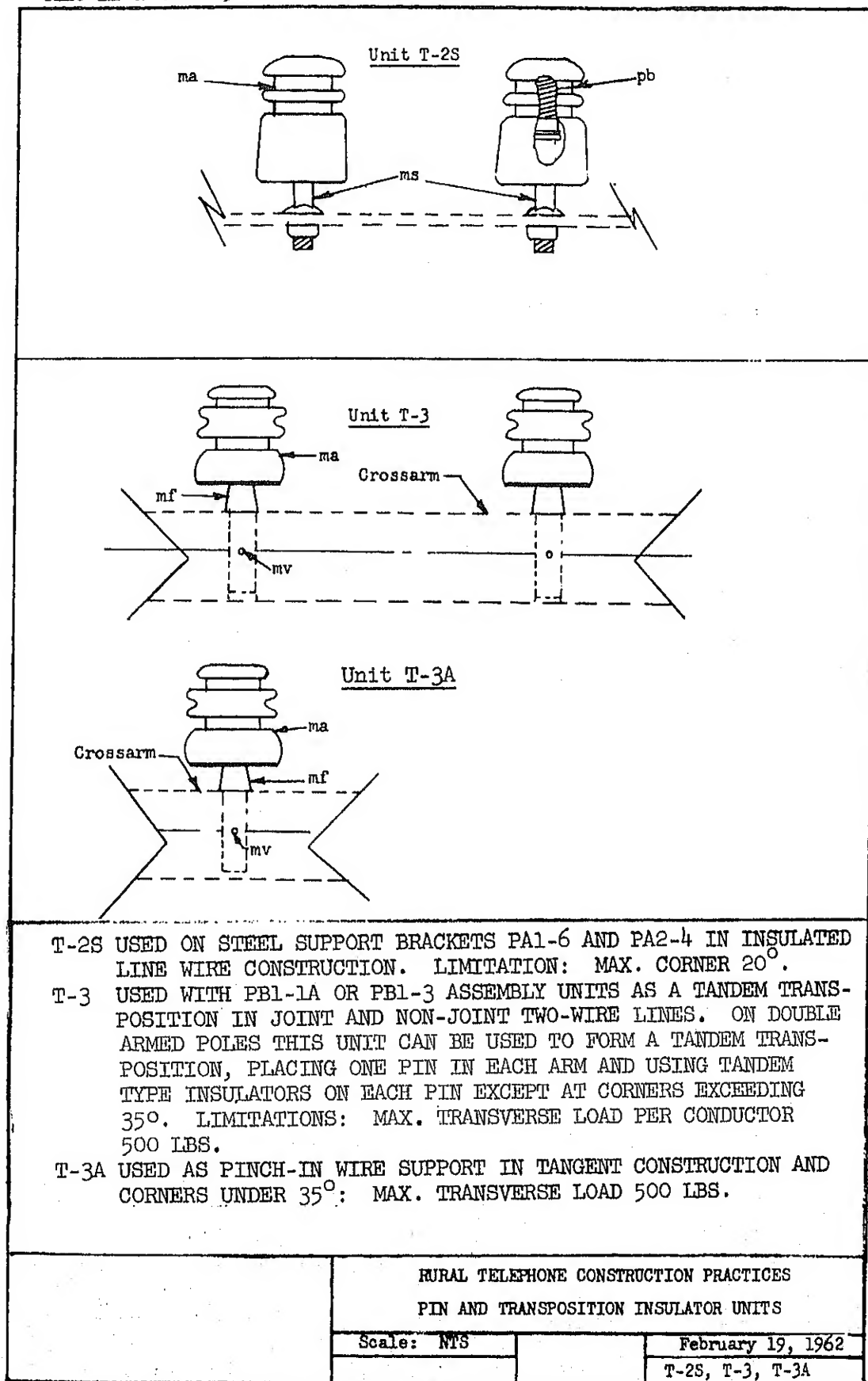


Figure 53

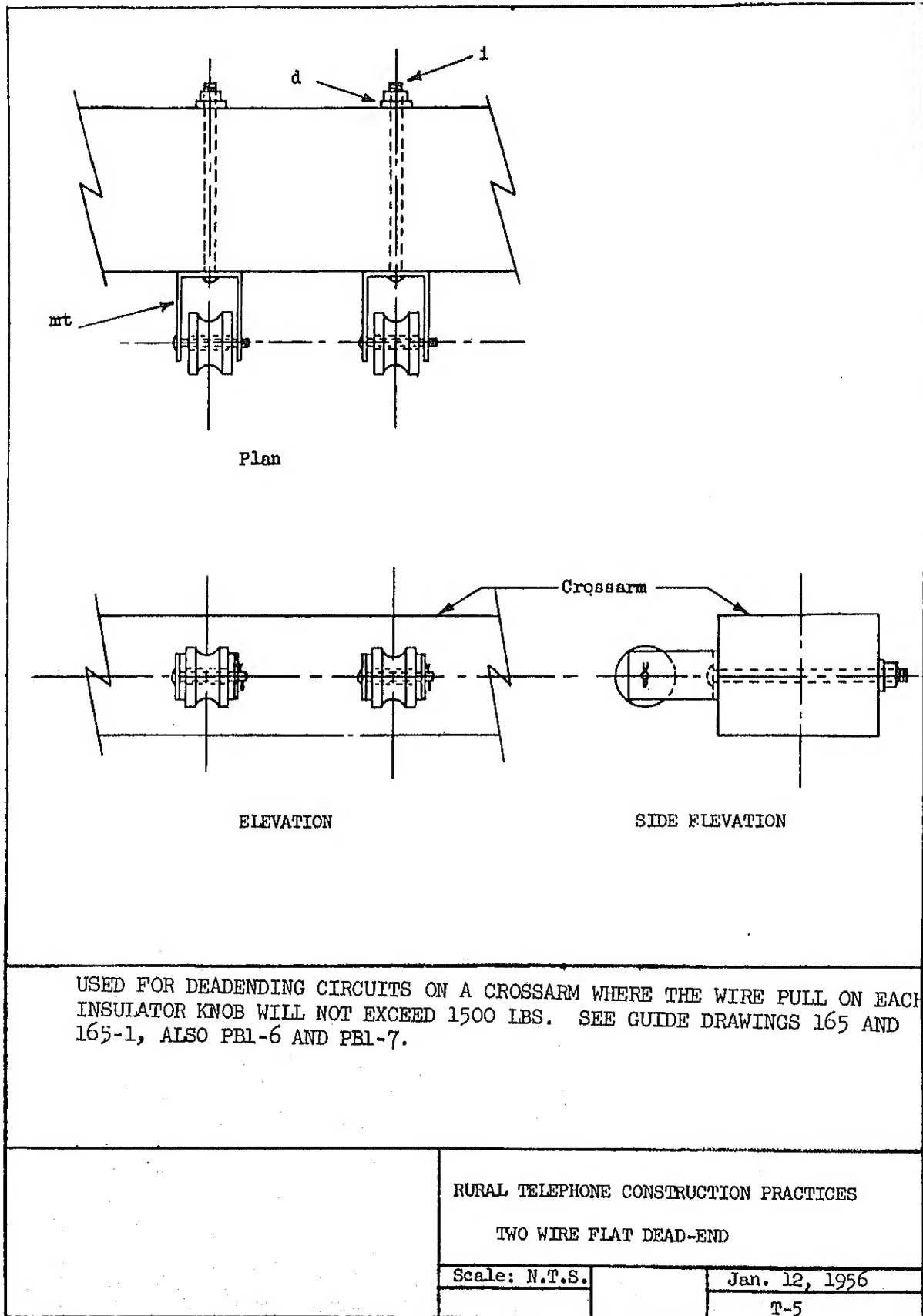


Figure 54

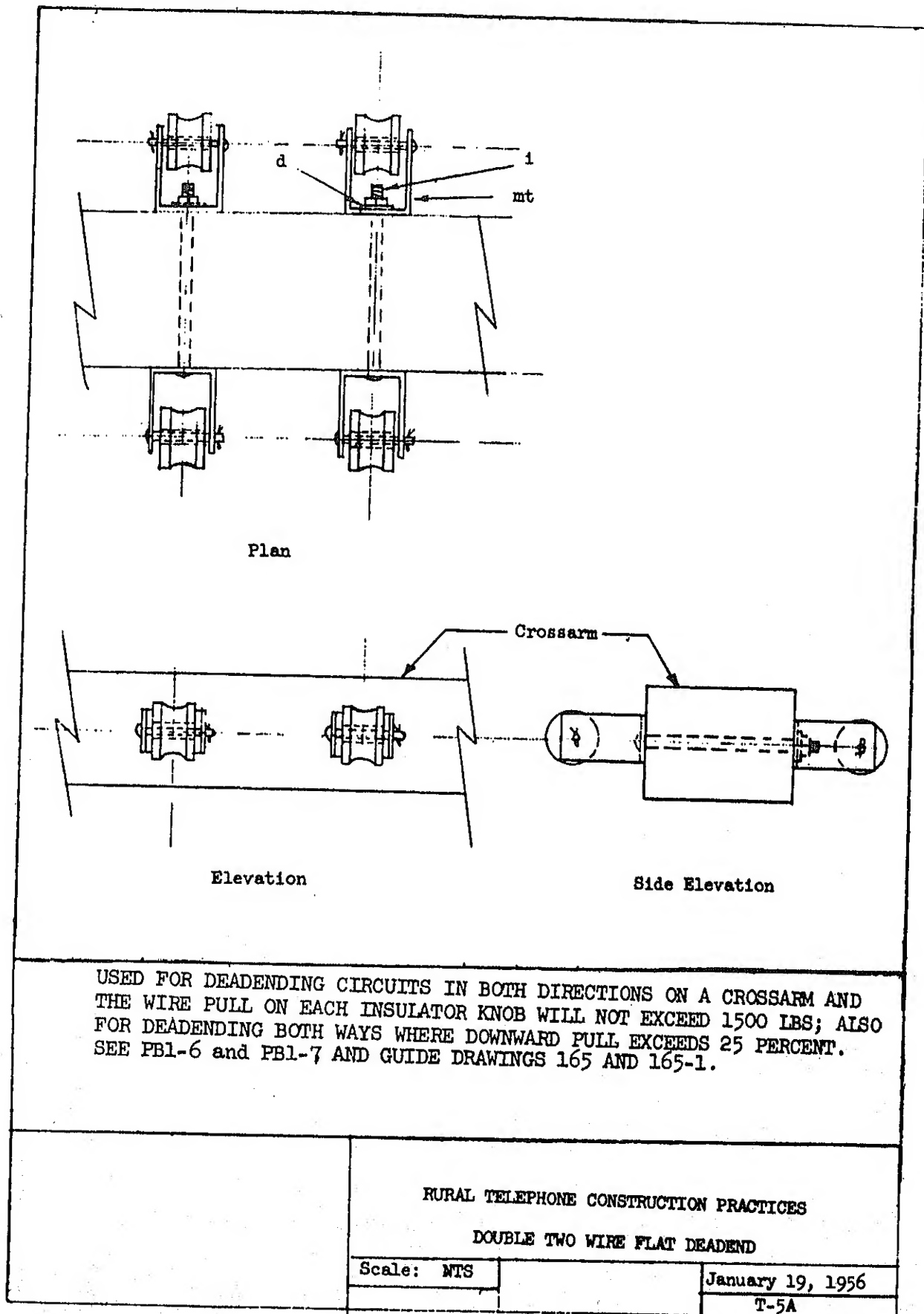


Figure 55

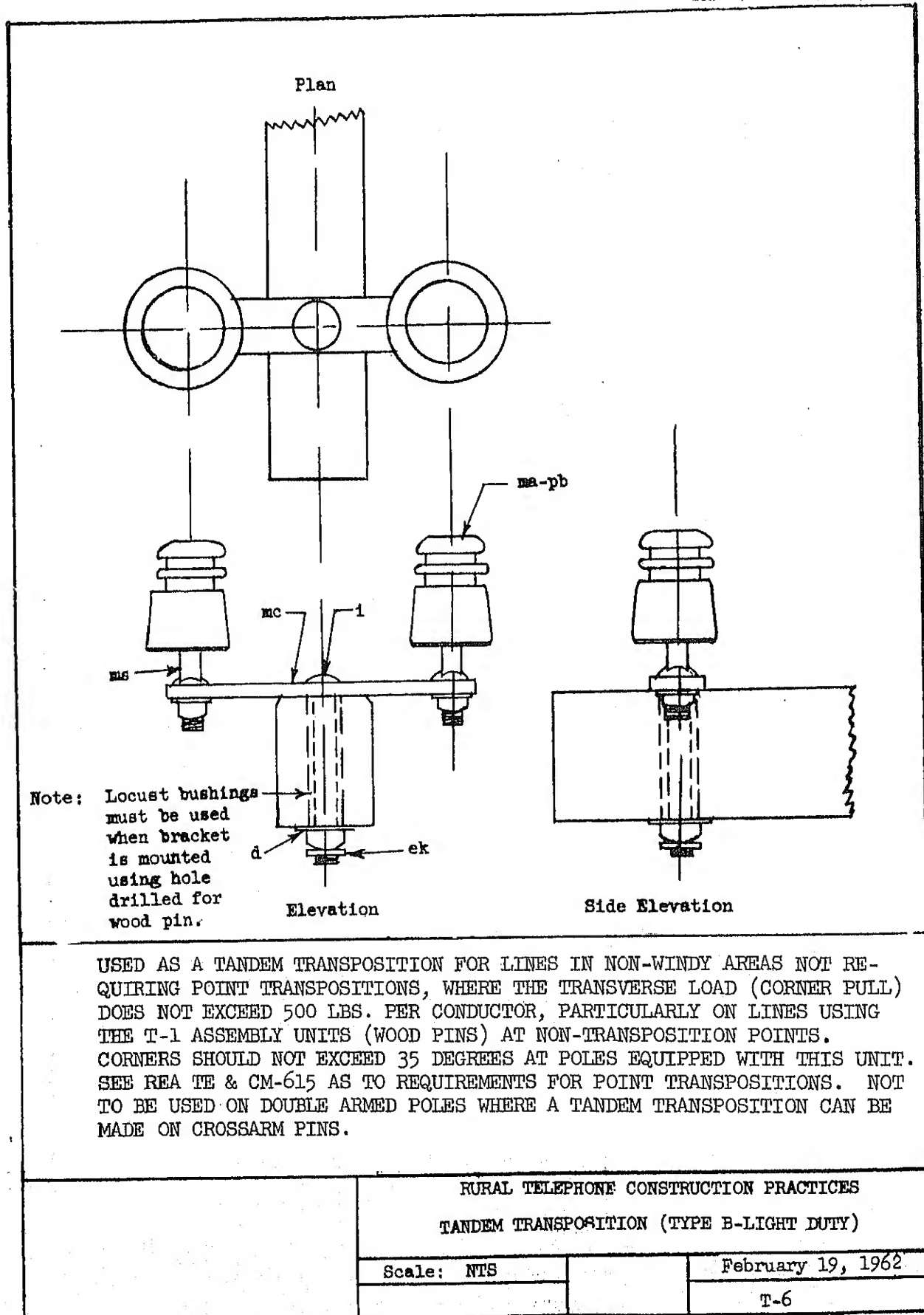


Figure 56

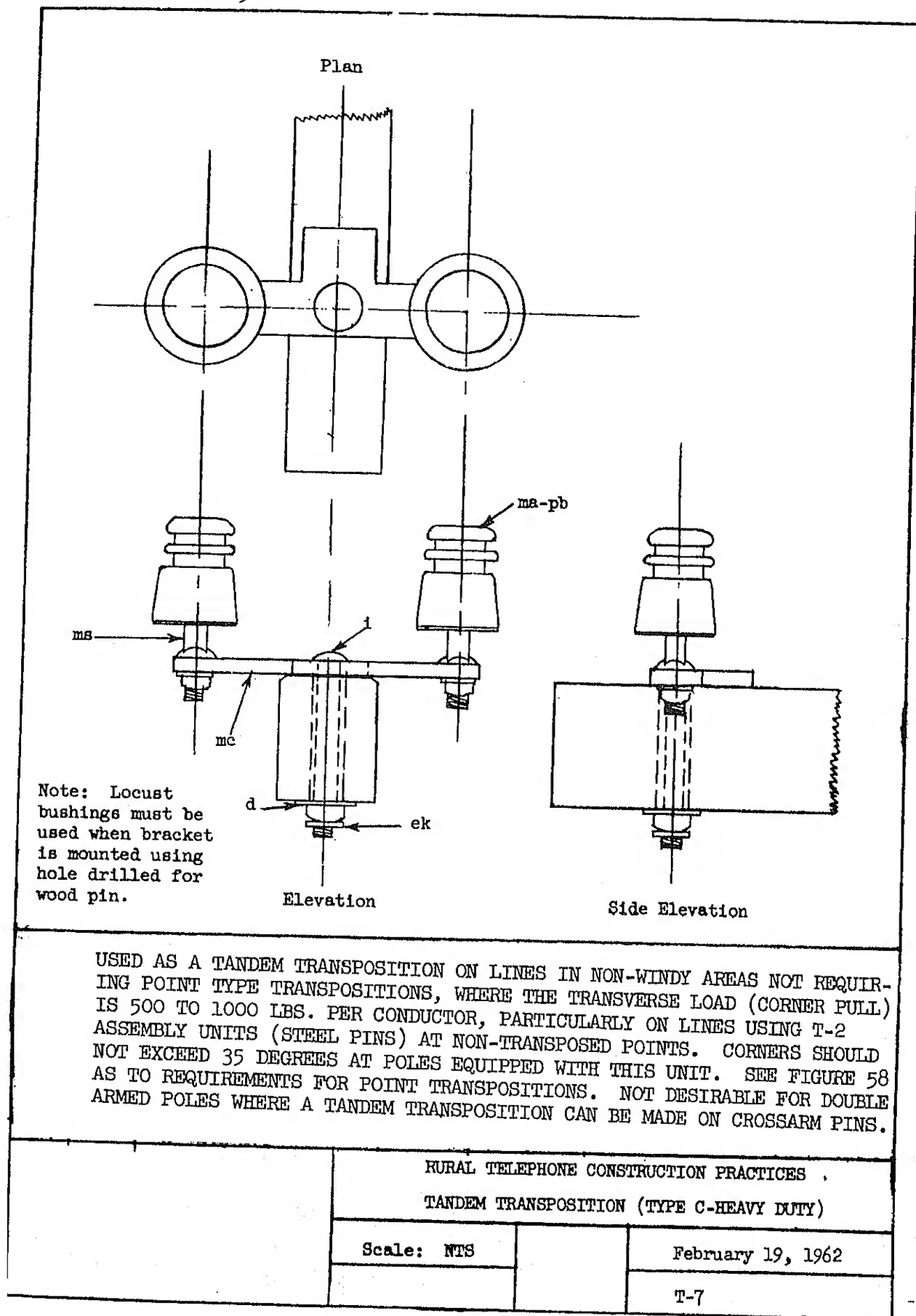
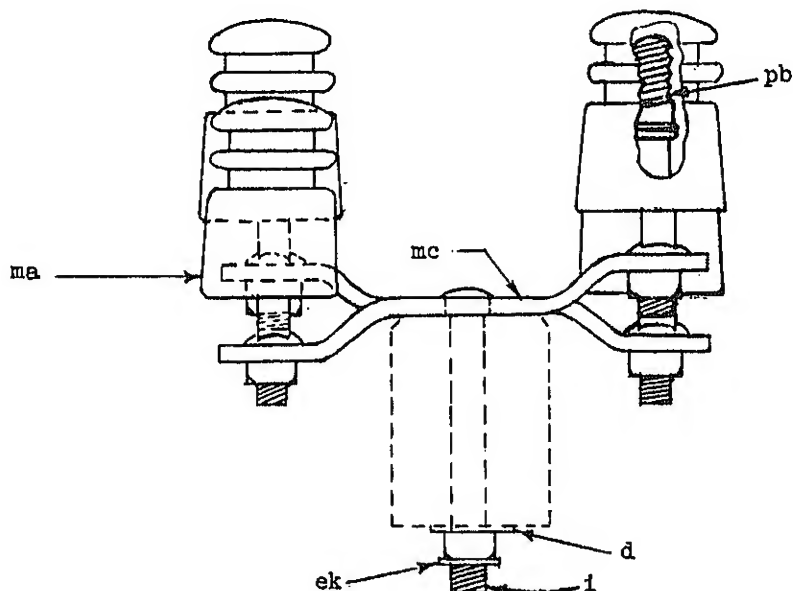


Figure 57



- T-18 REINFORCED HEAVY DUTY BRACKET, USED FOR TRANSPOSITIONS ON 6A, 10A, AND 2B CROSSARMS IN WINDY AREAS IF ADJACENT SPANS EXCEED 200 FEET.
- T-19 REINFORCED HEAVY DUTY BRACKET, USED FOR TRANSPOSITIONS ON 6B AND 10B CROSSARMS IN WINDY AREAS IF ADJACENT SPANS EXCEED 200 FEET.
- T-18 AND T-19 BRACKETS ARE LIMITED IN USE ON CORNER POLE CROSSARMS FOR VARIOUS KINDS OF WIRE IN ACCORDANCE WITH THE FOLLOWING TABLE:

MAXIMUM CORNER ANGLES - DEGREES

Span Lengths Feet	All Types of Line Wire		
	Heavy	Medium	Light
300	50	60	60
400	40	60	60
500	35	60	60
600	30	50	60

Note: Corners exceeding 60 degrees require buckarm construction

RURAL TELEPHONE CONSTRUCTION PRACTICES

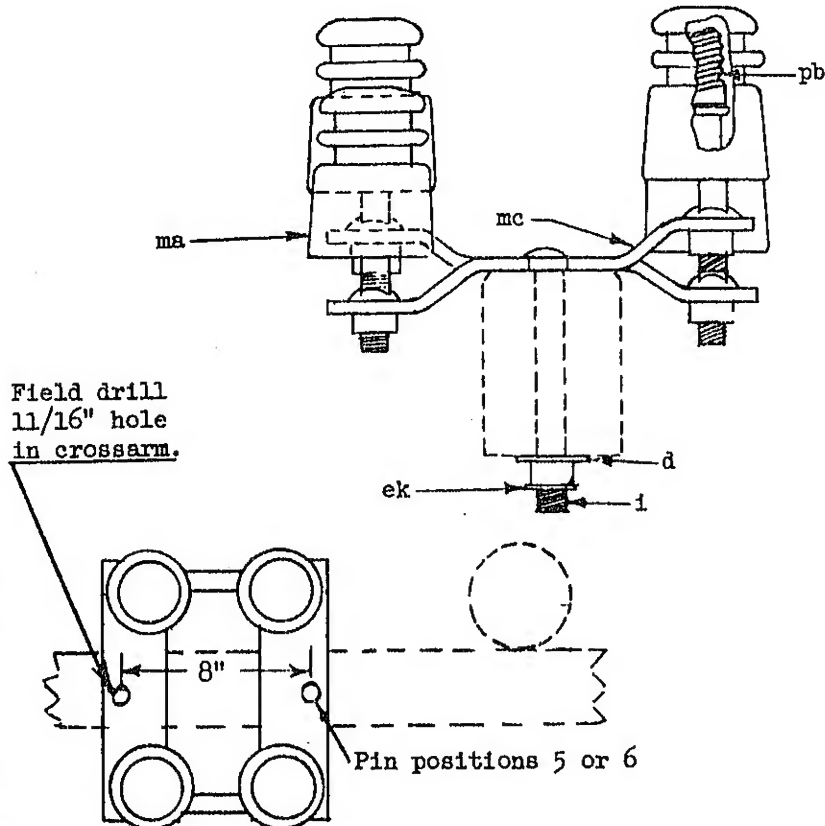
REINFORCED HEAVY DUTY
POINT TRANSPOSITION BRACKETS

Scale: NTS

January 18, 1962

T-18, T-19

Figure 58



Notes:

1. Bracket is equipped with integrally mounted insulator pins by manufacturers.
2. Plastic bushings must be installed on the insulator pins in the field before installing the glass insulators.
3. Locust bushings must be used when bracket is mounted using holes drilled for wood pins.
4. Both wires shall be placed in lower grooves of insulators.

USED ONLY FOR A POINT TRANSPOSITION ON A POLE PAIR ON 6A and 10A CROSSARM WHERE T-18 POINT TRANSPOSITION BRACKETS ARE USED ON NON-POLE PAIRS. LIMITATIONS: SAME AS FOR T-18 UNITS AS STATED ON FIGURE 58.

RURAL TELEPHONE CONSTRUCTION PRACTICES
REINFORCED HEAVY DUTY
POINT TRANSPOSITION BRACKET

Scale: NTS

January 18, 1962

T-20

Figure 59

Approximate Vertical Deads for Various Types of
Line Wires under NES Code Storm Loadings including:

- .109 inch steel, bare
- .109 inch steel, 15 mil polyethylene insulation
- .080 inch 25% copper-steel, 15 mil polyethylene insulation
- .080 inch 30% copper-steel, 15 mil polyethylene insulation
- .080 inch 30% copper-steel, bare
- .102 inch 30% copper-steel, bare
- .104 inch copper, bare
- .091 inch minimum - steel, bare

